The magazine for AUSTRALIAN Amateurs

December 2002
January 2003
Volume 70 No 12

Amateur Radio

$ 5.95

Holiday Projects

Measuring echoes and propagation on the HF bands
Part 1

An Update on the
Double Tuned Crystal Set
by Felix Scerri VK4FUQ

plus

2
Drew Diamond VK3XU projects

- A Temperature-controlled Crystal Frequency Calibrator
- Uses for a Dip Oscillator

International Call Signs
Quick reference table

Seasons Greetings

Santa's Shack

ISSN 0002-6859
9 770002 685123 12

Callbook 2003

TWO FOR THE PRICE OF ONE.

This year we are offering the full Callbook/Handbook as a handsome
BOUND COPY
that would grace any shack or bookcase **AND** as a
FULLY SEARCHABLE DISC

Both publications contain all Australian callsigns by callsign order in easy-read format and about 60 pages all about beacons, packets, rules and regulations, repeaters, frequencies and bands and much other useful information all in one convenient unit.

And as a special bonus on the disc alone, Greater Circle information.

ABOUT SEARCHING ON THE DISC

The material in the disc is distilled into Acrobat files. Which means that any word in the disc can be found by using the Acrobat Reader's >SEARCH>.

Example. Say you wanted to know who in your area had an amateur callsign/licence.
Easy — put in your postcode, do a search and there are your choices. (we have included Acrobat Reader)

And about that two for the price of one offer.

WIA, through its Divisions and other outlets is making the set, full book and even fuller disc, available for a delivered price that compares extremely favourably with the 2001 price of the book alone.

Contact your division to place your order now. Details on page 16.

Amateur Radio

The Journal of the Wireless Institute of Australia

ISSN 0002-6859

Volume 70
Number 12
December 2002
January 2003

Editorial

Advertising

Office

10/229 Balaclava Road
Caulfield, Victoria
Telephone (03) 9528 5962
Facsimile (03) 9523 8191

Business Hours 9:30am to 3:00pm weekdays

Postal

The Editor AR
34 Hawker Crescent
Elizabeth East
South Australia 5112
Email edarmag@chariot.net.au

Production

Newsletters Unlimited 03 9756 7797

Printer

Streamline Press, Melbourne (03) 9417 2766

Postal Service

IMS (03) 9291 5888

Production Deadlines

Advertising booking and articles for publication 10th of preceding month.

Hamads and advertising material deadline 18th day of preceding month

General

Technical

Columns

Our Cover this month

The antenna system is VK5LP's. As you will have read unfortunately Eric is no longer able to maintain the system due to continual bird attacks. The closing of Eric's VHF/UHF station is a great loss to the Australian VHF and UHF community.

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, How to write for Amateur Radio is available from the Federal Office on receipt of a stamped self-addressed envelope.

Back Issues

Back issues are available directly from the WIA Federal Office (until stocks are exhausted), at $4.00 each (including postage within Australia) to members.

Photostat copies

When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

The world's first and oldest
National Radio Society
Founded 1910

Representing
The Australian Amateur Radio Service

Member of the
International Amateur Radio Union

Registered Federal Office of the WIA
10/229 Balaclava Road
Caulfield North Vic 3161
Tel: (03) 9528 5962 Fax (03) 9523 8191
http://www.wia.org.au

All mail to
PO Box 2175 Caulfield Junction VIC 3161

Business hours: 9.30am-3pm weekdays

Federal Secretary
Peter Naish VK2BPN

Federal Office staff
June Fox Bookkeeper
Rita Trebilco VK3IF Examinations Officer

Council

President	Ernest Hocking	VK1LK
VK1 Federal Councillor	Gilbert Hughes	VK1GH
VK2 Federal Councillor	Barry White	VK2AAB
VK3 Federal Councillor	Jim Linton	VK3PC
VK4 Federal Councillor	David Jones	VK4OF
VK5 Federal Councillor	David Box	VK5OV
VK6 Federal Councillor	Will McGhie	VK6UU
VK7 Federal Councillor	Phil Corby	VK7ZAX

Executive

Brenda Edmonds	VK3KT
David Pilley	VK2AYD
Don Wilschefski	VK4BY

Federal Coordinators

AMSAT	Graham Ratcliff	VK5AGR
ARDF	Jack Bramham	VK3WWW
Awards	Mal Johnson	VK6LC
Contests	Ian Godsil	VK3VP
Education	Ron Smith	VK4AGS
FTAC	John Martin	VK3KWA
Historian	John Edmonds	VK3AFU
IARU	Neil Penfold	VK6NE
Intruder Watch	Harry Andersson	VK8HA
International Travel Host	John Miller	VK3DJM
ITU Conference and study group	Gilbert Hughes	VK1GH
QSL Manager (VK9, VK0)	Neil Penfold	VK6NE
Videotapes	VK2 Division	
Web	Joe Burford	VK5UJ
WICEN	John Weir	VK3ZRV

ACA Liaison Team
Glen Dunstan VK4DU (Corresponding)
Gilbert Hughes VK1GH
Keith Malcolm VK1ZKM
Peter Naish VK2BPN

Editorial Comment

Colwyn Low VK5UE

2002 – a significant year for AR

Well we have reached the end of another year. This has been a significant year for AR as it went on the newsstands and seems to be selling quite well.

I extend to all our members and readers my Best Wishes for a Happy Christmas and a Prosperous New Year. I also hope some of the true meaning of Christmas penetrates the thinking and actions of those who control our destinies.

We Amateurs have done a lot this year in experimenting with new modes, with competing in contests, with keeping in contact with old mates on our regular nets and with helping the community through WICEN. Some of us have been called out to help the emergency services with communications in the bush fires that have occurred in VK2 already this season. These volunteers deserve the thanks of all the community.

There has been a lot of discussion on new licence levels and the possible dilution of our qualifications. I think we have to recognise that there will always be at least two levels of licencing one to ease new people into the Amateur Service and one which recognises the knowledge to build operate and maintain a modern Amateur station. This latter should be kept at a level which enables holders to be given recognition and credit in qualifications required for employment in the electronics and communications industry.

Now for something to think about over the Christmas break. Would the WIA be more effective if we all joined the Wireless Institute of Australia and then made application to join a local Branch. The local Branch could then be as large as a State or as small as a Club. The current State Divisions, which run as companies, could keep the companies as affiliated organisations and distribute costs and income according to a predetermined agreement.

Just in closing. I read with interest Will's article on inverters (AR Nov 2002 page 52). Then the threat of power outages this hot summer triggered the thought that I had many Ah of 12 V and a fan or water cooler needed about a 100 watt to run. So I bought a 150 watt inverter on special for just over $80. It runs the fan OK, bit slow to run up but it settles down. Then I realised I had a solar panel that gets to 18 V in full sun at about 1 A. This then would be the top up charger. So if the power fails we will still have some cooling. See all that gear we need for Field Day operation is really useful after all.

I had hoped this would be my last Editorial, but as a replacement Editor has not been found I will continue in the position into 2003. However I do not wish to be Editor this time next year. So have a few thoughts as to who else might make a fist of Editor AR and talk to them about it.

Have a great time over the Christmas break. I hope all your presents are really useful. We will be back with the February 2003 issue hopefully available late January.

Colwyn VK5UE

PLAN AHEAD

December/January

Ross Hull VHF Contest
between December 26, 2002 and January 12, 2003.
(Details AR Nov page 43)

Summer VHF/UHF Field Day
11, 12 January (details page 47)

February

Gosford Field Day

VK3GH Hamfest, Healesville
23 February

Central Coast Field Day, Wyong
23 February

WIA Comment

Ernest Hocking VK1LK
email: president@wia.org.au
or via PO Box 691, Dickson, ACT 2602

Recent Events

I'll begin this month's notes by reflecting on the recent VK1 technical conference "OneTech02". This was my third technical conference this year and already I had a very high expectation of what I might find. However turning up on the day the first thing I noticed was the outside broadcast TV studio belonging to the Gladesville Amateur Radio Club. I had been promised that the session would be recorded but seeing the incredible effort put in by the Gladesville team can only make you sit up and pay attention to just what amateur radio operators can achieve when they work together. It didn't stop there though. Somehow the organiser Peter Ellis VK1KEP had persuaded representatives from the Australian National University to talk about their Bush LAN project, the Department of Defence and their HF modernisation project, as well as representatives of the IEEE and a very enthusiastic group of amateurs all happy to talk and discuss their experiences and experiments. And to show that amateur radio can still attract the big names we even had a lunchtime appearance from Dick Smith where he took part in a panel discussion about the future direction of the hobby. Well done Peter and all the VK1 team for organising such a spectacular day.

Yes there was a common theme - it was all about radio - but what a range of diverse aspects of the hobby. We had talks about using fluorescent light tubes as a 2m plasma antenna, computer enthusiasts talked about using Linux to drive amateur radio projects, and a number of people talked about how we can work with others to assist in using our experience to assist in Community Wireless LAN projects. Is amateur radio a dying hobby I hear you ask? Well these technical conferences have convinced me that amateur radio is very much alive and kicking - maybe it's taking a different form from that of previous years - but the same enthusiasm and pioneering spirit that captured the imagination of earlier generations is very much alive. I look forward to seeing the videotapes that were produced during the weekend and hopefully they can be made available to all amateurs across Australia so that they can see for themselves the enthusiasm of the weekend's activities.

Reflecting on my impressions of these various events has convinced me that we owe it to the next generation of amateur radio enthusiasts to do everything that we can to bring to their attention the merits of the hobby. Furthermore we need to make entry into the hobby appropriate to modern needs and relevant to the sorts of activities that a new generation of amateurs will undertake as part of the hobby.

End of Year

December brings in the end of the WIA year and brings many of us to reflect on what has happened over the last twelve months. I know that I have not achieved many of the goals that I have set myself at the beginning of the year. I had hoped that we could have made much more progress in the two areas of restructuring the WIA and moving forward on a new foundation licence. However just because some of the goals have not been met does not mean that significant progress has not been made in progressing this work. Where we have put in the effort this year, I suspect that we will reap the benefits in the next year. So I believe that 2003 will be a very significant year for amateur radio in Australia.

Personally this last year has been extremely busy in terms of work and WIA activities. However I can honestly say that the rewards have by far and away exceeded the effort put in. Just today I exchanged emails with a newly licensed amateur - I'm not sure who was happier with his success: him or me. Somehow knowing that the efforts of each and every member of the amateur radio community contributes something towards the hobby, tells me that we can be assured of a very vigorous future.

By the time this copy of AR reaches you, we will be well into planning the start of 2003 and I look forward to being able to update you on a range of initiatives that we have planned for the year.

I will bring this month's note to a close and wish you all 73 and the very best for 2003. I look forward to hearing from you as always on any amateur radio matters.

Ernest Hocking VK1LK

CHRISTMAS/NEW YEAR BREAK for WIA Federal Secretariat

The Melbourne secretariat of WIA Federal will close for the Christmas-New Year break on Friday 20th December 2002 and re-open on Tuesday, 28th January 2003.

The WIA Exam Service advises that amateur examination papers for marking and orders for exam material required over the holidays, must be received in Melbourne by Monday, 9th December to ensure posting before Christmas.

Any material or orders received after that date cannot be guaranteed to be dealt with before the break and may have to wait until the Exam Service re-opens.

Some uses for a Dip Oscillator

Drew Diamond, VK3XU,
45 Gatters Road,
Wonga Park, 3115.

The keen radio experimenter who owns, and knows how to employ a dip oscillator has a strong ally. Let me illustrate here just some of the more usual applications for this most versatile device.

It seems that some models of 'modern' solid-state dippers are rather difficult to use, in that it may be difficult to observe the meter needle deflection, and this is perhaps why some amateurs have become indifferent to the technique. Admittedly, older style valve dippers were (or are) generally more sensitive to the dipping phenomenon. However, recent work with 'Kalitron' oscillators (Refs 2, 3 and 4), which have improved sensitivity, has helped to put the GDO back into the amateur's toolbox.

A key application is in finding the resonant frequency of lumped (coil and capacitor) tuned circuits. Photo 1 illustrates how the coil of the oscillating dipper is coupled to the coil of a passive (not energized) circuit. The coils may be end-on, as shown, or side-by-side, depending upon physical constraints. For best results, the passive circuit should be free from the loading effects of any bias resistors, and the inputs and outputs of active devices-, which should be disconnected from the 'hot' side of the tuned circuit. For high impedance input devices, such as FETs and cold valves/tubes, loading is not usually a problem. The dipper's frequency is then varied about the estimated frequency of the passive circuit until a 'dip' in meter reading is observed. Use the least amount of coupling (greatest distance) consistent with obtaining an observable dip. The resonant frequency of the passive circuit is then read from the dipper's frequency dial.

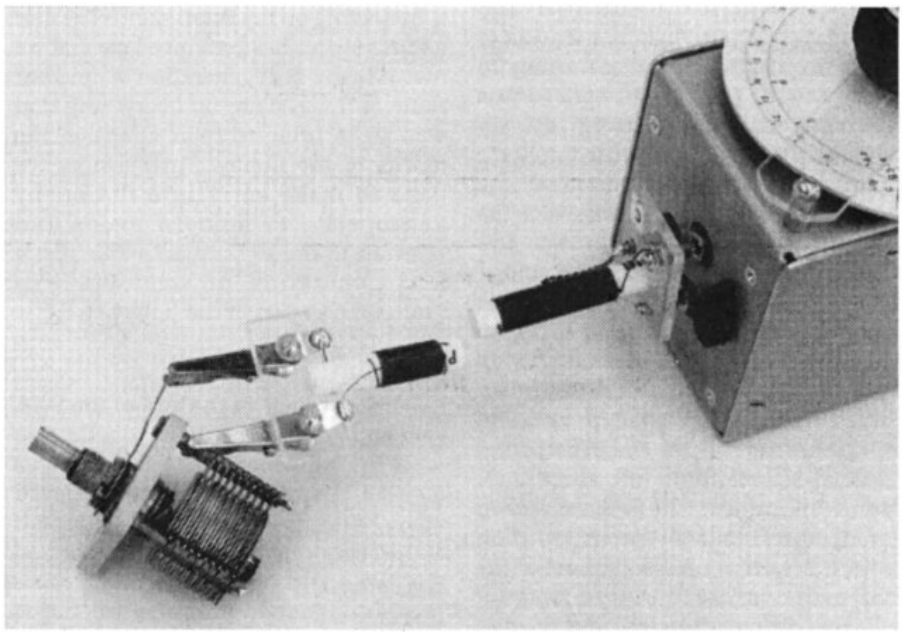


Photo 1. Dipping a plain solenoid coil

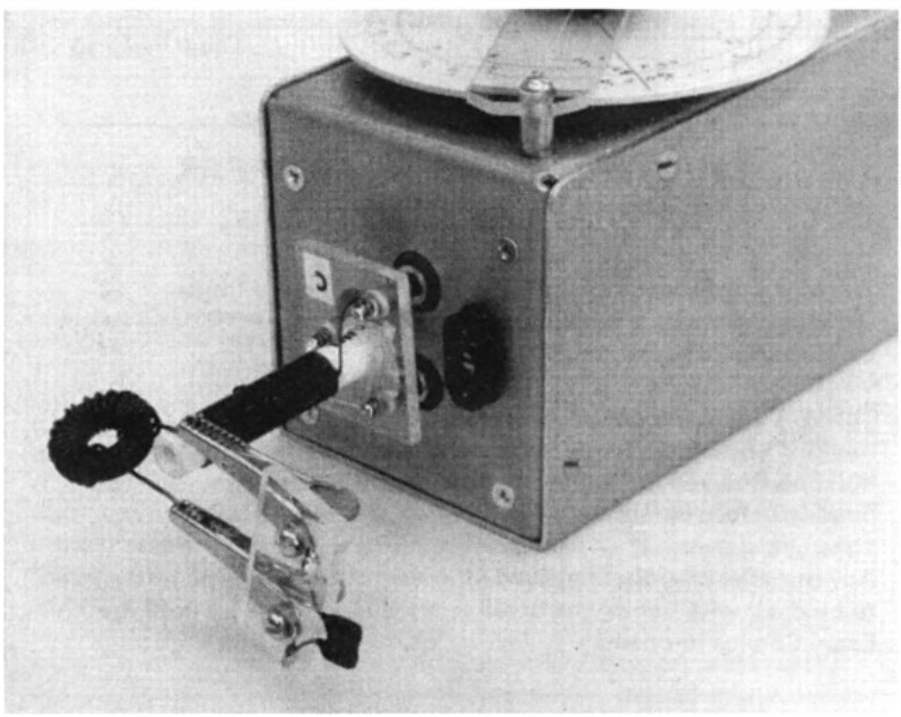


Photo 2. Dipping a toroidal coil

For toroidal coils, the dipper's coil is inserted between the connecting leads of the toroid, which effectively forms a one-turn loop, as shown in Photo 2.

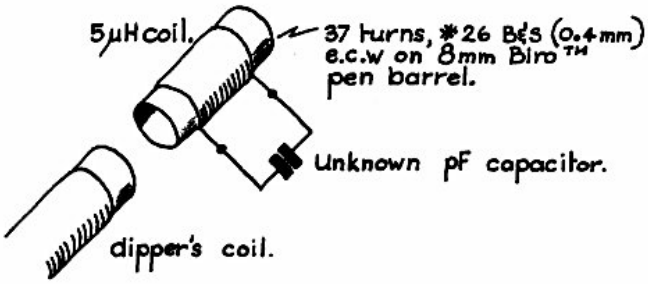


Fig. 1a

To find the value of an unknown pF capacitor :–

$$C_{pF} = \frac{25330}{f^2_{MHz} \times L\mu H}$$

e.g.; dip found at 7.1 MHz ;

$$C_{pF} = \frac{25330}{7.1^2 \times 5\mu H}$$

$$= 100.5 \text{ rounded to}$$

$$= 100 \text{ pF}$$

Figure 1a

Fig. 1b

Drawn : D.C.D.

To find the value of an unknown μH coil (or inductance):–

$$L\mu H = \frac{25330}{f^2_{MHz} \times C_{pF}}$$

e.g. dip found at 30 MHz ;

$$L\mu H = \frac{25330}{30^2 \times 100 \text{ pF}}$$

$$= 0.28 \mu H \text{ rounded to}$$

$$= 0.3 \mu H \ (300 \text{ nH}).$$

Figure 1b

One of the handiest applications is in finding the value of microHenry coils and pF capacitors at radio frequencies. Pictured in Photo 3 are a 5 microHenry "standard' inductor, and a 100 pF silver mica capacitor. These are each fitted upon a small rectangle of Perspex (acrylic), or other low-loss material, with crocodile clips attached for the connection of the unknown component. Details of the 5 μH coil are shown in Fig. 1a. Photo 1 illustrates how an unknown variable capacitor is first 'dipped' with the standard coil, and Photo 2 shows the 100 pF standard capacitor being used to 'dip' a toroidal coil. Fig. 1a also explains how the value of an unknown capacitor may be calculated. The method is particularly useful in finding the minimum and maximum values of variable capacitors (which are seldom clearly marked), and Fig 1b shows how

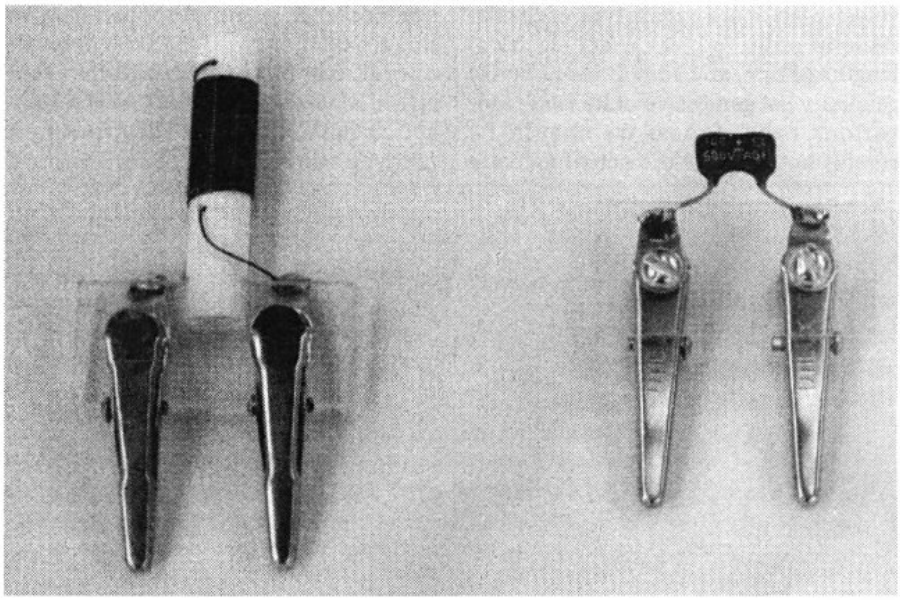


Photo 3. 5 μH coil and 100pF 'standards'

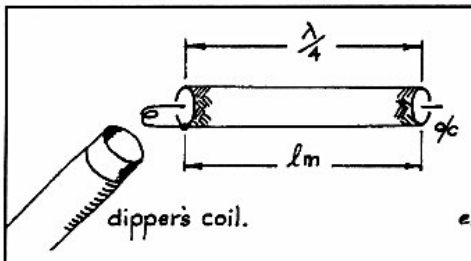


Fig. 2a

To find velocity factor of ¼ length of cable :-

$$V = \frac{\ell_m \times 2 f_{MHz}}{150}$$

e.g.; 3.2 m length of RG-8 dips at 14.1 MHz;

$$V = \frac{3.2 \times (2 \times 14.1)}{150} = 0.6$$

To find length of cable necessary to provide an electrical ¼ :-

$$\ell_m = \frac{150 \times V}{2 f_{MHz}}$$

e.g.; a ¼ of cable is required for a stub at 21.1 MHz, where V = 0.6;

$$\ell_m = \frac{150 \times 0.6}{42.2} = 2.13\ m$$

Figure 2a

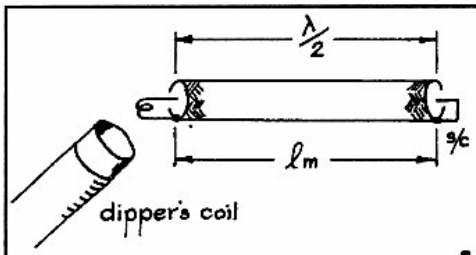


Fig. 2b

Drawn: D.C.D.

To find velocity factor of ½ length of cable :-

$$V = \frac{\ell_m \times f_{MHz}}{150}$$

e.g.; 13 m length of RG-8 dips at 6.9 MHz;

$$V = \frac{13 \times 6.9}{150} = 0.598 \text{ rounded to } 0.6$$

To find length of cable necessary to provide an electrical ½ :-

$$\ell_m = \frac{150 \times V}{f_{MHz}}$$

e.g.; a ½ of cable is needed at 28.2 MHz, where V is 0.6;

$$\ell_m = \frac{150 \times V}{28.2} = 3.19\ m \text{ rounded to } 3.2\ m$$

Figure 2b

the inductance of an unknown coil may be determined.

There are instances in antenna work where is it necessary to know the velocity factor of a certain type of coaxial cable in order to make exact electrical lengths of line, and so radio handbooks generally list generic velocity factors for various cable types. We should be careful however, as the actual velocity factor may be quite different from that specified. In my experience, it is much better to calculate, and then actually confirm the electrical length. To measure the electrical length of a quarter-wave line (coaxial or twin) the far end is left open-circuit (o/c) which will therefore reflect a short-circuit back to the link-coil at the measuring end. A two-turn hook-up wire link may be soldered to a suitable connector, as pictured in Photo 4, which shows how the dipper may be coupled to your coax line. Also see Fig. 2a. As the dipper's frequency is varied upwards (from a frequency that is estimated to be well below the resonant frequency [fr] of the line), a distinct dip will be observed as the dipper is swept through fr. Reduce coupling as necessary to obtain a just discernible dip (thus obtaining best frequency accuracy). It will be found that the line under test is quite a good radiator, allowing the dipper's signal to be heard on the station receiver, which may be used to obtain a more exact reading of the actual fr.

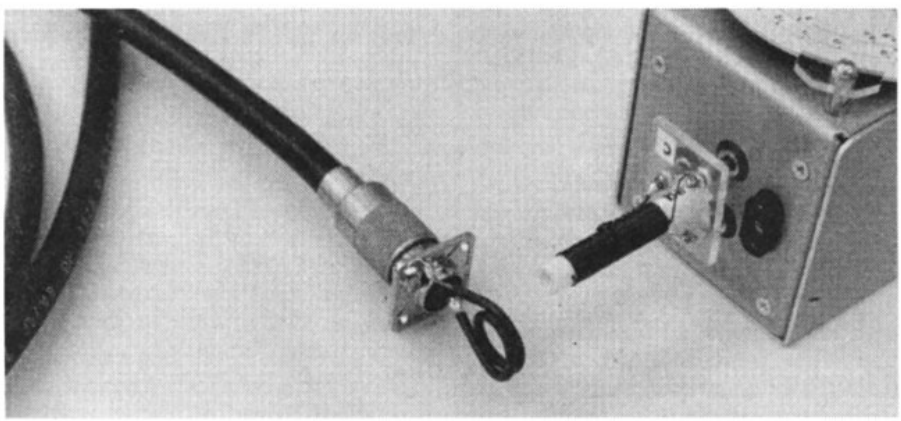


Photo 4. Dipping a length of coax line

Electrical half-wavelengths may be obtained in a similar manner, except now the far end must have a short-circuit (s/c) applied- perhaps by using a crocodile clip or similar. The method and formula are shown in Fig. 2b.

Our dipper may be used to find the fr of dipoles and other low-impedance feed-point radiators. Preferably, the measurement must be made with the antenna in-situ. However, as this is

generally only possible with ground-plane and similar types, quite good results may be obtained with the antenna wire simply raised off ground and away from conducting objects as far as reasonably possible- perhaps strung between convenient supports such as trees or posts. A set of wooden steps may be used to gain access to the feed point. Any feed-line must be disconnected during the measurement. Photo 5 shows how the dipper is coupled through a short one-turn wire loop, which is attached with crocodile clips to the feed-point. Because antennas usually behave as low Q tuned circuits, quite close coupling is usually required to obtain a dip. The centre of the Kalitron's coil (Ref. 2) is at zero RF potential, and so the link may be placed in the middle of the dipper's coil as shown.

If your dipper does not already have a crystal test function, quartz crystals may be checked for frequency and activity. Connect a two-turn link coil across the crystal's pins, then close couple the dipper to the link coil. A prominent dip should occur as the dipper is swept across the crystal's frequency. A more precise measurement of the crystal frequency may be had by tuning for the dipper's signal on the station receiver. Interestingly, it should be found that the dipper's frequency would pull into that of the crystal, and become "crystal-locked".

Finally, our dipper makes a handy signal source for receiver, transmitter and other tests. A two or three-turn link coil looped over the middle of the dipper's coil will provide a signal (in the case of the Kalitron of Ref. 2) of about 1 mW in 50 ohm. For a crystal-locked source, simply couple your crystal as described above.

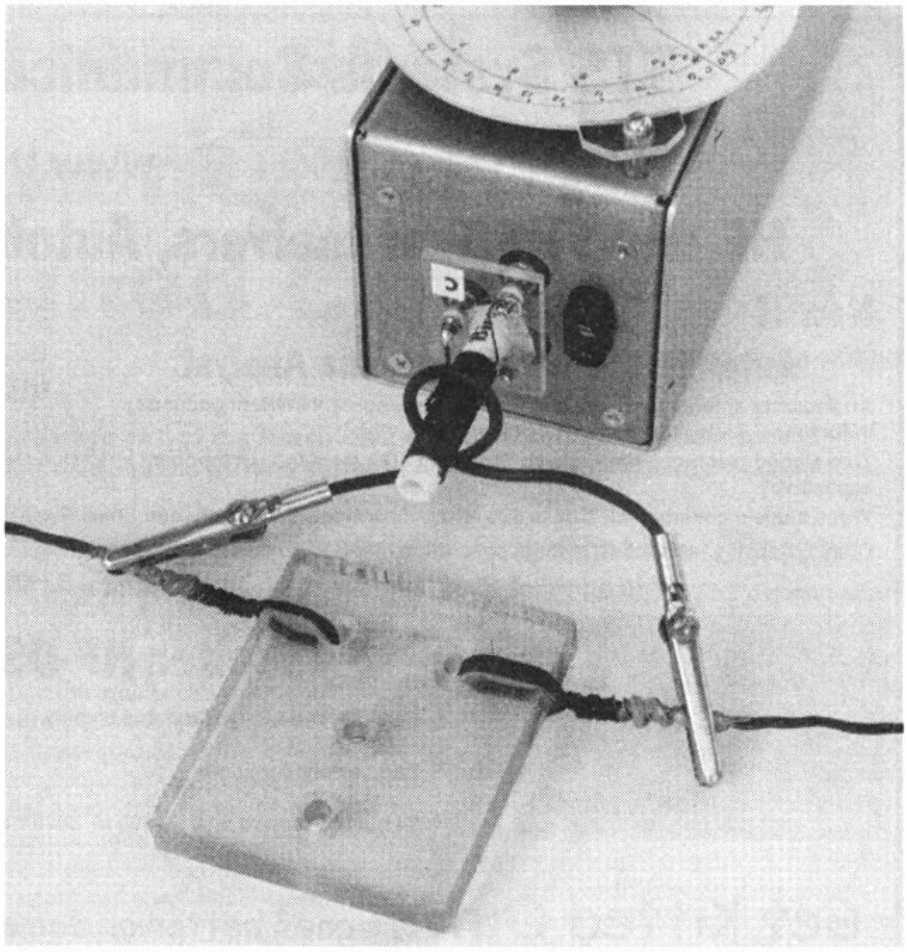


Photo 5. Coupling to a dipole antenna

References and Suggested Further Reading

1. Servicing with Dip Meters; John Lenk, Foulsham-Sams.
2. "A 'Kalitron' Gate Dip Oscillator/ Crystal Checker"; D. Diamond, AR, to be published 2003.
3. "The G3WPO FET Dip Oscillator Mk2"; A. Bailey, G3WPO, RadCom, Apr. '87.
4. Test Equipment for the Radio Amateur, C. Smith, G4FZH, RSGB, pp 33 - 41.
5. "The Grid Dip Oscillator"; J. Buchanan, K8WPI, CQ, Feb. 2000.
6. "What Can You Do With a Dip Meter?"; QST, May 2002.

Computer links

Over to you

Hello, I've recently returned to Australia after working overseas for 4 and a bit years.

I've found the changes in the AR-scape quite marked.

Packet Radio, which was rapidly growing when I left, appears to have stalled and now be dropping in popularity. The small group of people running packet wormholes through the Internet have in many cases disappeared and taken with them the potential for attracting young computer hobbyists into amateur radio.

I've also noticed a dramatic rise in the use of 2.4 GHz by 802.11b wireless computer LANs. My personal observations are of quite large groups (hundreds) of computer hobbyists in at least two of our major cities (Sydney and Melbourne) now linking their computers with this technology. Several young lads in my area have sought advice on, and successfully constructed helical antennas for use on 2.4GHz and now that I know what to look for, I've identified several more, just looking out the train windows on the way to work. This growth appears to be similar in many aspects to the CB Radio hobbyists of 30 years ago.

Left alone, this network is likely to continue growing. I wonder if it may be opportune for Amateur Radio clubs to seek out these people in their areas and offer to help them with the RF side of their hobby, to hopefully catch some spillover into amateur radio?

David Henderson VK2KWY

TTS Systems Communications Equipment

TTS Systems

FREE CATALOGUE www.ttssystems.com.au

HF and VHF Transceivers, Autotuners and Kits

New !!

Autek Research RF/Antenna Analyst.

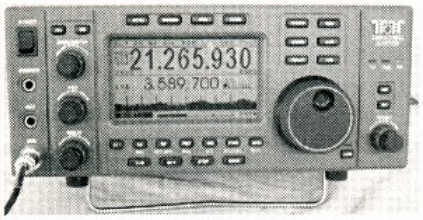
An accurate antenna/network analyzer that measures VSWR, Impedance, Inductance, Capacitance and Reactance.

True signed reactance readings on the VA1. Is the reactance component inductive or capacitive?

Three models covering 1.6 Mhz to 500 Mhz. Low Cost, Low Power and Small Size!

Comprehensive instruction manual describing many RF measurement techniques.

All in a pocket-sized instrument. **Call for data sheets and more details**



TEN-TEC Jupiter HF DSP Transceiver

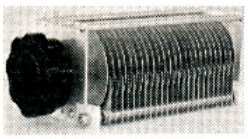
- Easy-to-read LCD main panel display.
- Band sweep function
- 34 built-in receive filters—300 to 8000 Hz.
- Multi-function meter provides bar graph and digital readout of signal strength, TX power and SWR.
- Seven selectable main tuning rates

Get Kitted Out "It goes better on something you made yourself"

Z11 QRP Auto Tuner Kit

HF Receiver Kit

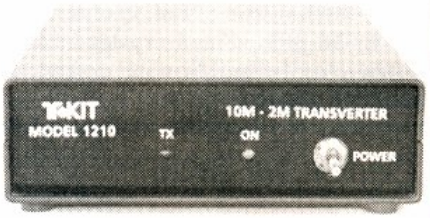
AT11-MP Auto Tuner Kit



H.V. Variable Capacitor Kit

Dummy Load Kit

RT11 Remote Auto Tuner Kit



10-2M Transverter Kit

Soon from Ten-Tec.
The Orion HF 32 bit DSP Transceiver and the Argonaut V QRP IF-DSP Transceiver.

TEN-TEC

We have RF Cables, Connectors and Baluns

★ All kits include easy-to-follow step by step assembly instructions.

You supply the soldering iron and basic tools!!!.

All kit products can be supplied fully assembled and tested.

Service and Support for all Ten-Tec and LDG equipment

We stock ***Amidon Iron Powder and Ferrite Cores*** *— Call for an application guide*

Phone 03 59774808. Fax 03 59774801 info@ttssystems.com.au

Modifications and Enhancements for the Double Tuned Crystal Set

Felix Scerri VK4FUQ

Since the original article, which appeared on page 8 of the March 2002 edition of AR, was drafted, several modifications have been worked out that improve the general performance in weak signal areas. These modifications now follow.

Firstly, the tuning coils

Higher "Q"coils will benefit performance by increasing the available level of signal voltage to the detector (improving efficiency) and tightening selectivity. If "Litz" Wire with a high number of strands is available, very efficient coils will result with attendant benefits. If "Litz" wire is unobtainable, then a novel winding technique I have developed will improve coil "Q" and efficiency. I have found that a bifilar winding, instead of a simple single wire winding is much more efficient. I used a bifilar winding composed of two 0.25 mm winding wires in lieu of the 0.315 mm single wire winding. Both these approaches result in improved coil efficiency. However, there is a slight downside to this. As a simple consequence of increased "Q", the audio bandwidth will narrow somewhat. It will be necessary to reduce the spacing between coils a little, to compensate for this, by slightly overcoupling the two tuned circuits.

Secondly, the detector

Now things get interesting. The unfortunate but widespread use of heavy "processing" by AM broadcast stations can cause serious diode detector distortion, especially under low signal level conditions. Such is the case in our local area. I've looked long and hard at this serious problem, and come up with an interesting solution in the form of an "active" detector. Basically the problem stems from insufficient voltage injection into the diode. I have developed a hybrid diode/FET detector that has superior performance over a simple diode detector. The circuit is essentially a germanium diode directly coupled into a simple FET source follower buffer stage. Due to very high impedance diode "load", a high impedance is reflected into the tuned circuit through the diode, resulting in very light "loading" and as a consequence, more efficient use of available signal voltage, reducing detector distortion. Compared to a simple diode detector, this active diode/FET detector has much higher audio output and considerably less distortion. It does require a 9V battery, but that's a small price to pay for greatly improved detector performance. I am told the basic circuit resembles a now forgotten valve circuit, but I've not seen a solid state version before.

One final modification

Although the diode/FET detector offers improved performance, in our local area, some distortion remained, and a complete solution was found by adding an untuned FET RF preamp immediately in front of the diode/FET detector. The 10 or so dB gain provided by the preamp has completely removed the last traces of detector distortion. It may or may not be required, depending on local conditions. So there you are, a number of modifications for improved performance. Local conditions will dictate which ones are required.

73s from Felix VK4FUQ.

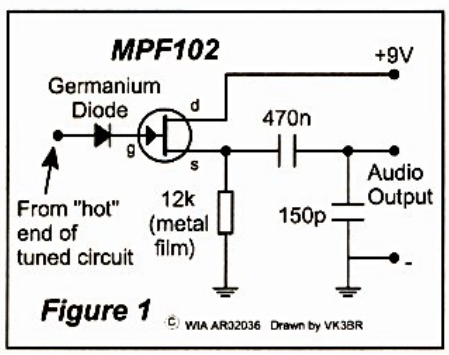


Figure 1

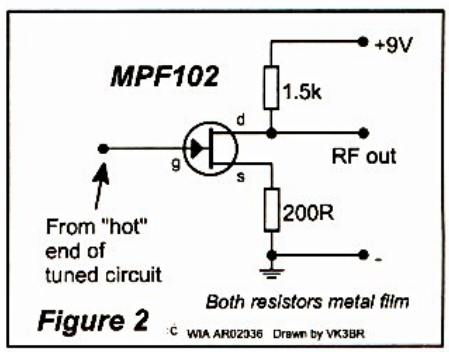


Figure 2

PLAN AHEAD

John Moyle Field Day
15, 16 March

Urunga Field Day
19, 20 April

Measuring echoes and propagation on the HF bands

Part 1

By H. de Waard (PA0ZX) and J.G.C. Niehaus (PA0FA)
Translated by Pieter Kloppenburg (VK1CPK) from VERON's 'Electron' of December '93

The Electron editors consider themselves fortunate to offer an article on a subject that many are interested in, but with which few have occupied themselves. In short, another facet of our hobby. The article is in two parts

Life on earth depends on the rays of the sun, and the sun continues to make our lives agreeable in many different ways. Without it, all life would soon disappear.

The formation of ionised layers at great heights (more than 50 km) through ultraviolet rays from the sun seems a small issue compared with everything else that happens in the universe. However, because of this, for example, long-distance communications have become possible.

For us Amateurs this is a fountain of inexhaustible joy, but also in general terms the possibility of reflection of radio waves by the ionosphere, despite the growing importance of satellite communications, remains of great importance.

In 1901, Marconi succeeded in establishing communications over a long distance between England and Newfoundland. In 1902, Heaviside and Kennelly postulated independently of each other the assumption that this was possible because radio waves at great heights are reflected by ionised layers. In 1925, Appleton proved the existence of ionised layers and determined the height of the important F-layer by measuring the delay of echoes of electromagnetic pulses. Since that time, echo measurements have become a standard method in research of the ionosphere.

A later practical application of using the ionosphere as a reflector for pulsed signals is the "Radar over the horizon". We Amateurs had to put up with these long-distance radars in the USSR of gigantic output powers in the form of "Woodpeckers" on our HF bands.

A conscious use of echoes via the ionosphere has never been an important issue in Amateur circles. This is not surprising; it is easy to believe that, apart from professional interest, not much can be achieved with it. Even so, Amateurs have experimented with this a long time ago. In QST of March 1952 (Ref 3), is a comprehensive article from W6QYT and W6POH in which the results are described of echo measurements in the 20-metre band. These were carried out in professional surroundings, namely at the University of Stanford, and with a peak power of 800 watt. This was probably not conducive to further home-conducted experiments.

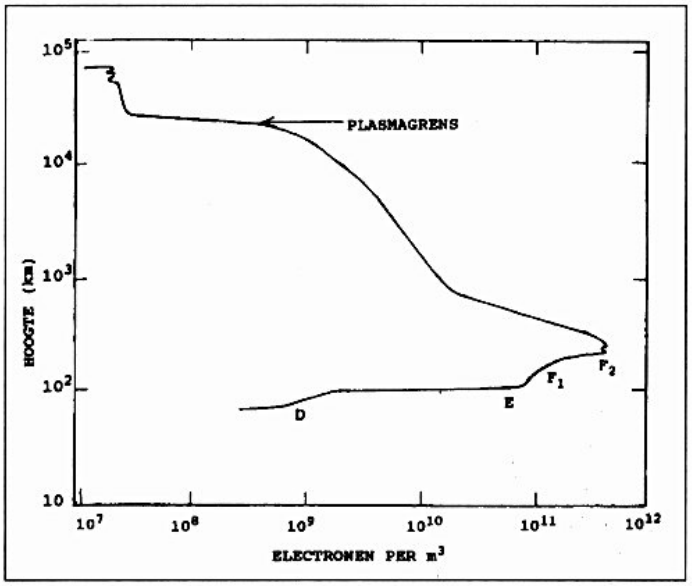


Figure 1: Height versus Electrons per m^3. Progress of ionisation density of the air above the earth's surface. The curve shows the concentration of free electrons depending on height, during the day, near low latitudes and during low solar activity. The height of the different layers (D, E, F_1 and F_2) of the ionosphere is also indicated.

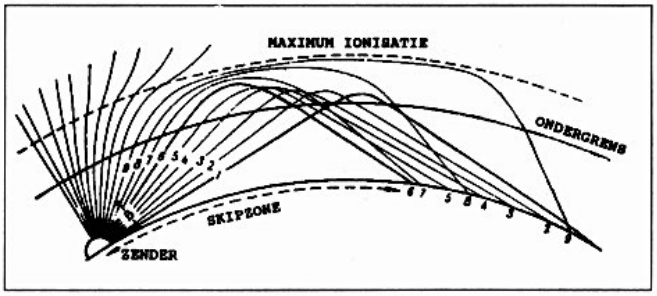


Figure 2: Schematic reproduction of the paths of electromagnetic waves that bounce once between the ionosphere and Earth, for different take-off angles b (Ref 6).

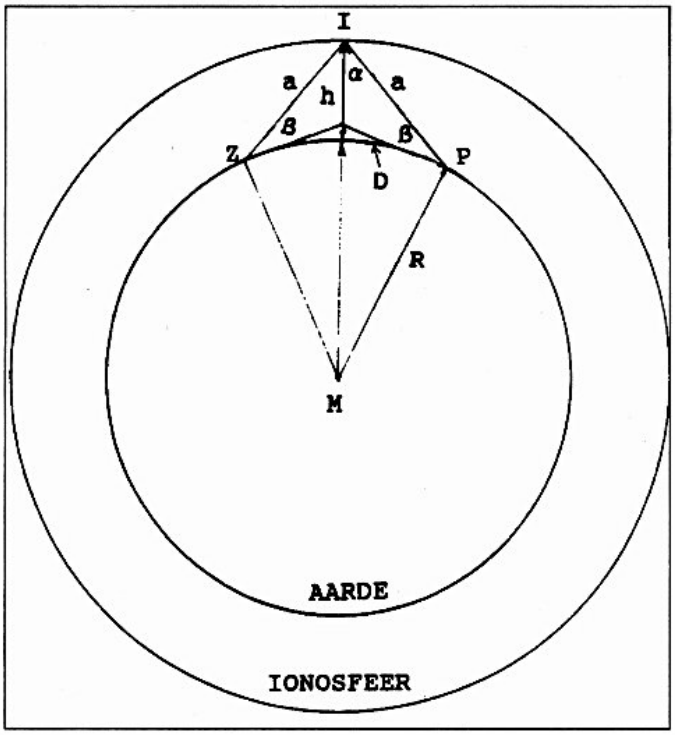


Figure 3: Diagram to aid in the calculation of algebraic magnitudes from measured echo delays. Z = Place of transmitter, I = Place of reflection in the ionosphere (the gradual bending of the wave is replaced by a sudden reflection, which is correct, provided a correction is made in the value of h, the height at which the reflection occurs), P = point of reflection against earth after one hop, a = distance between Z and I = distance between I and P. This distance follows direct from the measured echo delay t_E: a = (1/4)c/t_E (c = 300,000 km/s is the speed of light), R = earth radius, D = length of hop, h = effective height of reflection sphere with respect to earth sphere, b = take-off angle, a = acute angle of the electromagnetic wave in the ionosphere. Using the measured value of a, and the given values of h and R, all the other magnitudes in the figure can be determined.

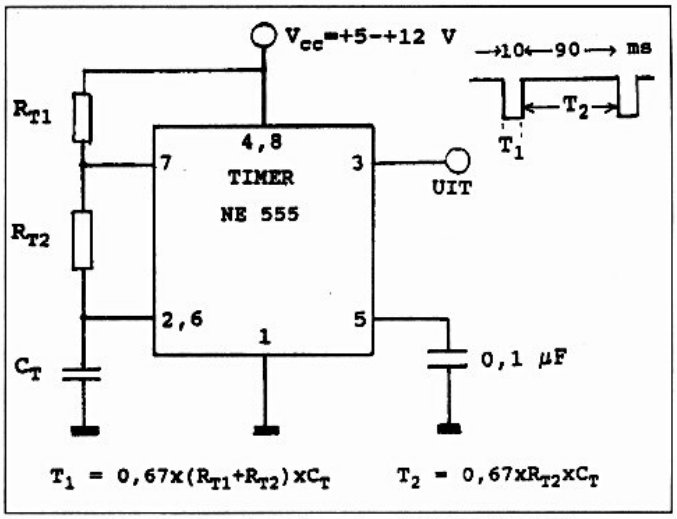


Figure 4: Pulser, based on NE-555 (PA0FA)
For T_1 = 10 ms (make) and T_2 = 90 ms (rest), use values of R_{T1} = 70 kW and R_{T2} = 18 kW, C_T = 1mF
For T_1 = 10 ms and T_2 = 190 ms, R_{T1} = 42.3 kW, R_{T2} = 3.3 kW, C_T = 4.7 mF.
Use 10-turn potentiometers for the given pulse duration for R_{T1} and R_{T2}, for example 100 kW and 20 kW.
V_{CC} is not critical; it must be of a value that ensures effective keying of the transmitter. Sometimes the correct pulse voltage can be obtained from the transceiver documentation. Check the pulse length after adjustment of V_{CC}.

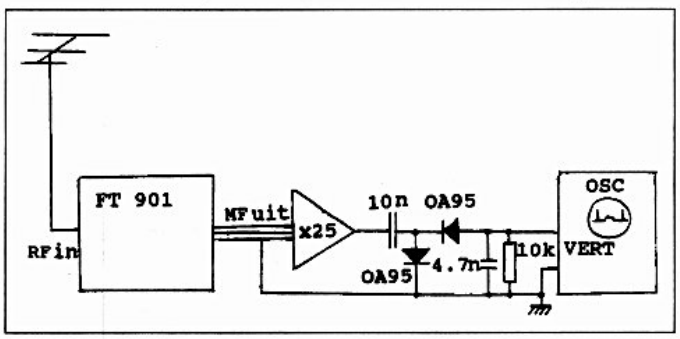


Figure 5: Interface between IF output FT-901 and oscilloscope (PA0ZX)

Nearly every PA operator, especially if he uses a beam, and probably a linear amplifier, is made aware of the existence of echoes via the ionosphere when he makes DX contacts. When he, together with another PA operator or a West European operator that he cannot receive directly, is in communication with a DX station that for both of them lies in approximately the same direction, for example the United States, he will often observe that the other European station is very readable. But when he turns his beam in the direction of the other European station, that signal disappears, provided that the distance between the European stations is at least 50 km. For a long time, this phenomenon has been called "Back-scatter". For this reason there exists, the widely held belief, but faulty assumption, that this scatter occurs in the ionosphere.

In December of 1991, the writers of this article, whose QTHs are about 40 km from each other, decided to use a pulsed signal to determine the distance at which Scatter appears. One station (PA0ZX) transmitted the pulses, and the other station (PA0FA) received the direct signal as well as that delayed by the ionosphere. In radar technology, this is called the bistatic method, which means separate locations for transmitter and receiver. Further research resulted in the development of a monostatic method, whereby transmitter and receiver are in the same place, and which can even be combined in a transceiver. This method is described under the heading "Monostatic long distance radar"; a cheap propagation monitor for the HF bands.

The results of the research invite us to continue with further development, and other Amateurs are warmly invited, to join us. An important conclusion from the research is that the returned signals have nothing to do with ionospheric back-scatter but that they are caused by reflection from the earth's surface and especially from sea waves and steep mountains, while the ionosphere acts normally as a nearly ideal mirror for to-and-fro radio waves. From measurements of the delay of echoes, the distance of the reflecting objects can be determined. You speak, therefore, of "echoes via the ionosphere", not of "scatter through the ionosphere". The

latter is wrong. This conclusion is not new; earlier echo measurements had led to this conclusion a long time ago. Even before the coming of weather satellites, an ionospheric radar system existed in the United States that measured the direction and height of waves in the Atlantic Ocean. With that, the development and movements of hurricanes could be observed (ref 4).

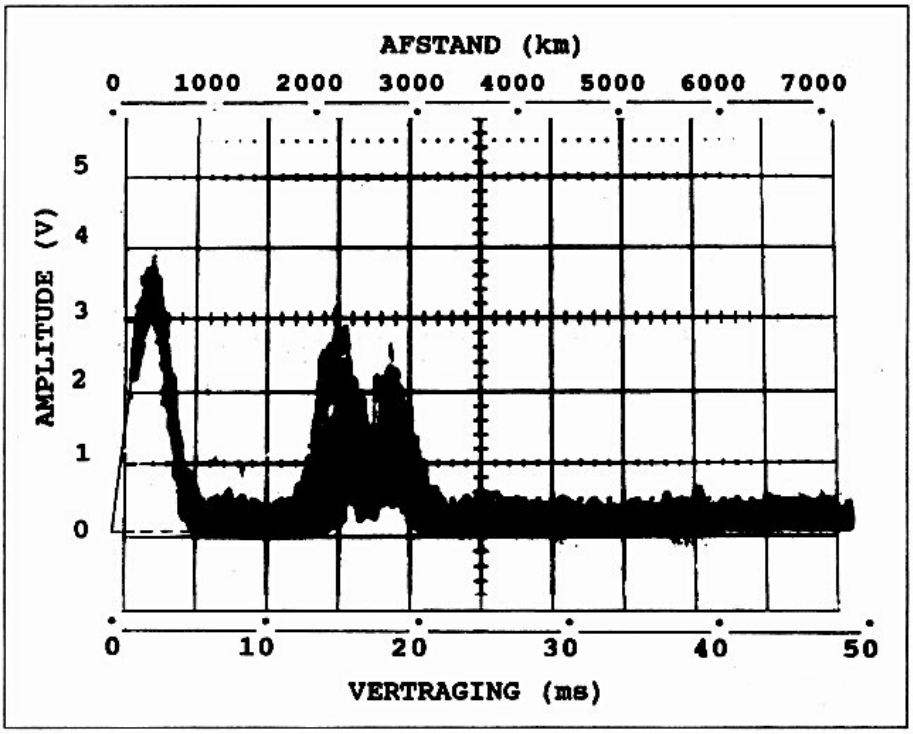


Figure 6: Amplitude versus Delay. One of the earliest echo photographs, recorded on 24-12-91 at 14:45 UTC. Frequency 28.96 MHz, IF bandwidth 3 kHz, beam heading 270°. Below the figure the pulse delay t_E, above the figure the one-way covered distance of the wave (2a = (1/2)c/ t_E). Recorded with Polaroid camera (shutter open for about 20 sweeps). Further details in the text.

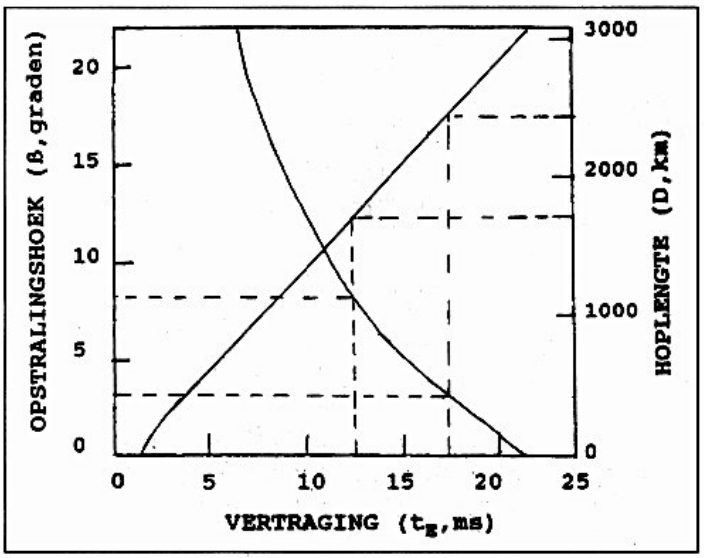


Figure 7: Take-off angle versus Delay versus Hop length. Calculated values of take-off angle b and hop distance D, as a function of the echo delay t_E, by an effective ionosphere height h = 200 km. The results of the measurement are drawn with broken lines in the figure.

Propagation of radio waves between earth and ionosphere.

Much is written about this matter, some in amateur accessible literature. We shall mention, therefore, only those aspects that are necessary for a good understanding for what follows.

The ionosphere stretches out between heights of 50 to more than 10,000 km above the earth. The region is penetrated by the rays, which the sun transmits in the far ultra-violet. Under the low pressure these rays release electrons from the molecules that are present there (mainly nitrogen and oxygen molecules), and the rays are thus eventually absorbed. This process is called ionisation, hence the name ionosphere. Closer to the earth, the only rays remaining are ultra-violet, close to the visible light spectrum and capable of frying us red or brown but unable to ionise air. Because some far ultra-violet wavelengths are absorbed better than others a certain layering of ionisation builds up and the strength of each is height dependent. Distinguished according to height are the D-layer (about 80 km), the E-layer (about 100 km), the F_1-layer (about 200 km), and the F_2-layer (about 300 km). The heights of these layers and the density of the free electrons per cubic metre are roughly indicated in Figure 1. Whether these layers can reflect the penetrating radio waves depends very much on solar activity, the frequency of the waves, and on the time of day and the year.

The most important layer for DX traffic is the F-layer and most often the F_1-layer. It is with this layer that we are concerned in this article. The bending of the electromagnetic wave in the layer is mainly caused by the presence of free electrons. We can compare this in some respects to the bending of light in glass or water, with the major difference being that the change in direction of the wave in the ionosphere is gradual and not sudden, as is the case with air and glass. Moreover, in the ionosphere the ability to bend waves, aka refractive index, is smaller than one, while that for light in a transparent material is always greater than one. We shall not go further into the physics background in this article, but to observe that in Nineteenth Century physics it was possible to

calculate the bending of waves in ionised gases, long before the existence of the ionosphere was proved through measurements. In Figure 2 (due to Al'pert) (Ref 6) are shown calculated tracks of waves that propagate through the ionosphere are shown.

We see that these waves are always bent back in the direction of the earth's surface. In the figure, wavelength and ionisation density are chosen such, that waves (numbered 1 to 9) with a sufficiently low take-off angle b return to the earth's surface. With an increase in angle b, the wave begins to be bend more strongly with increasing height until we see a wave (number 9) that keeps going horizontally over a great distance just below the height of maximum ionisation (the Pedersen wave, after the discoverer). When the angle b becomes even larger, the wave proceeds, after an initial bending in a horizontal direction, right through the maximum of ionisation, and above that bends upwards and disappears parallel to its original direction into space. As can be seen in Figure 2, the distance that can be bridged in one hop depends mainly on the take-off angle of the wave. The longest distance that can be bridged (with the exception of the Pedersen-wave) is with a wave with a 0° take-off angle, the shortest with wave number 6, a rather large angle. A zone is created around the transmitter within which the transmitter cannot be received, the so-called skipzone and beyond that a zone where the transmitter, after one reflection by the ionosphere, produces a strong signal. In principle, some scattering shall always occur by ionospheric action, but this scattered wave is so weak that it can hardly be observed with ordinary equipment.

The notion that plays an important role in the practical calculations of the possibility of communication via the ionosphere, is the highest frequency, whereby a wave with a small take-off angle b is just reflected by the ionosphere. This frequency is called the Maximum Usable Frequency (MUF). The greater the take-off angle, the lower the frequency whereby reflection occurs. With a take-off angle of 90°, i.e. straight up, the frequency of the wave that is just reflected by the ionosphere is the lowest, and called the critical frequency f_c. For many years it has been routinely measured in many places around the world. A relation exists between the MUF and f_c as follows:

$$F_{MUF} = f_c / \cos a \quad (1)$$

where a is the angle at which the wave approaches the ionosphere (indicated in Figure 3). This angle can be calculated from the take-off angle and the height h where the reflection occurs. Of importance to us is the maximum frequency whereby a wave hits the

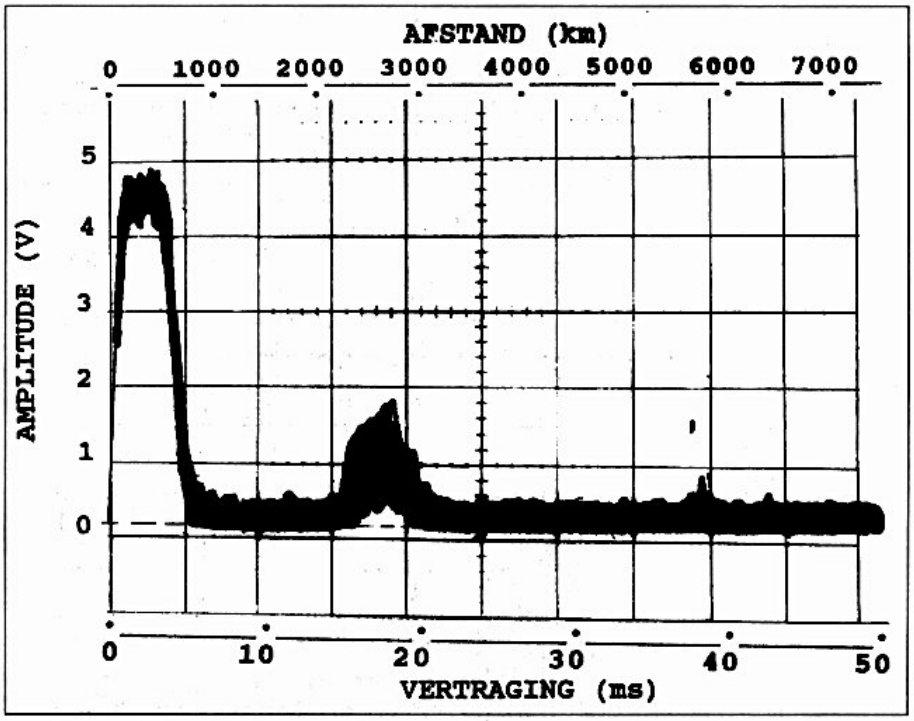


Figure 8: Amplitude versus Delay. Echo from Southerly direction, probably from the Atlas Mountains in Morocco, North Africa, at a distance of 2200 ± 100 km. Recorded on 29-12-91 at 13:15 UTC. Frequency 28.96 MHz, IF bandwidth 3 kHz, beam heading 180°

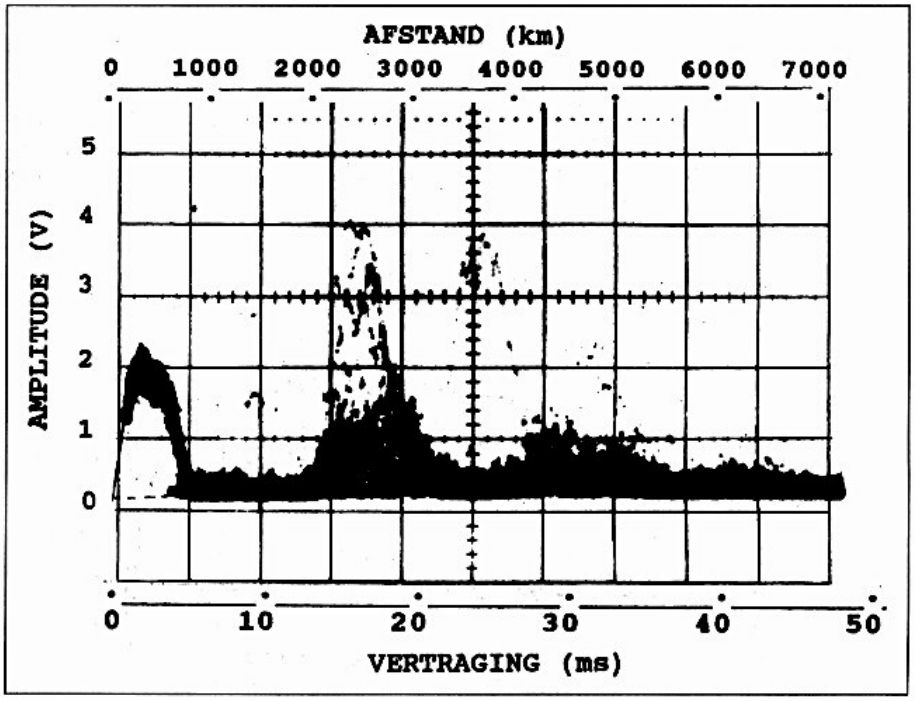


Figure 9: Amplitude versus Delay. (Triple?) Double echoes from the ocean, recorded on 29-12-91 at 13:30 UTC. Frequency 28.96 MHz, Beam heading 280°. Other details as for Figure 6.

ionosphere with a small angle and is still reflected by it, because that is what we use when making long distance connections. For h = 200 km and a realistic take-off angle, b = 8°, a is 72°, $f_{MUF} = 3.2 \times f_c$.

The critical frequency depends on the degree of ionisation of the ionosphere, which is determined by the sun's activity and the time of day (at night, f_c is reduced by a factor of two or three). During a period of maximum solar activity the critical frequency can increase to f_c = 13 MHz, thus f_{MUF} is 40 MHz, and the 10-metre band is wide open.

There are two important possibilities for propagation across distances much greater than single-hop. In the first place through multiple hops, in the second place through a wave which propagates over a long distance inside the ionosphere (the Pedersen-wave). The first possibility shows itself when we make contacts with Amateurs in the United States, the second when comparatively reliable contacts are made with Amateurs in Australia and New Zealand.

Echo measurements with a "bistatic radar".

The appearance of echo signals during DX-contacts, as a consequence of which stations in the same area (but not within reach of each other) can receive one another with signal strength of S3-S7 when their beams are pointing in the same direction, led us to the question of where those echoes actually come from. Because the answer "Ionospheric Scatter" that experts gave us in the first instance wasn't very convincing, we decided to conduct a test. The distance between our QTHs (Gieten - Groningen) is about 30 km and was therefore favourable, because the signal strength of the direct received signal and the echo signal (when the band is open) were comparable; with pointing angles of 270° for both stations, it was about S-7. We found that the sound had a hollow ring to it, as in an empty room with hard surface walls. Within a few days PA0FA had made up a pulser (Figure 4) that could be plugged into the Key-input of his transceiver (ICOM IC765), PA0ZX connected the IF-output of his Yaesu FT901 via an IC amplifier to a detector (Figure 5), which turned the received

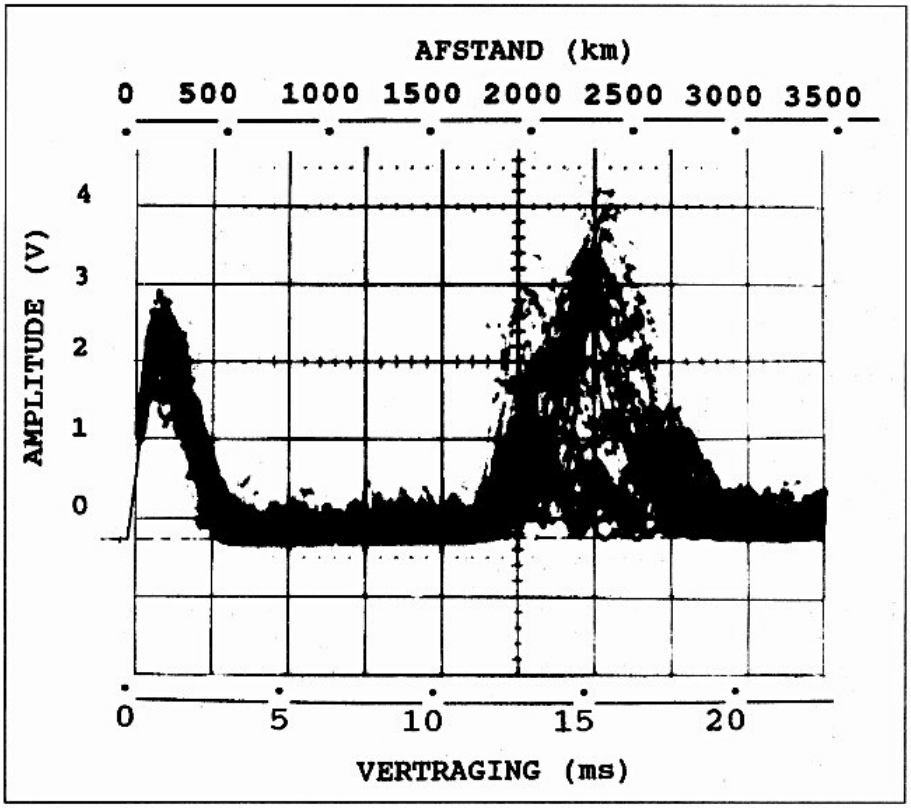


Figure 10: Amplitude versus Delay. First echo from the ocean, on a smaller time scale. Recorded on 16-1-92 at 11:40 UTC. Frequency 28.96 MHz, IF bandwidth 2 kHz, Beam heading 285°. Other details as for Figure 6.

CW signal from PA0FA (with a pulse duration of 1 ... 5 ms and pulse period 50 ... 200 ms) into a row of positive-going pulses that were applied to a scope with a calibrated timebase. Directly received pulses trigger the scope. Usually, the timebase is set for 5 ms per major division on the scale. The IF bandwidth of the receiver can be varied from 1 to 4 kHz.

We used a Polaroid camera to record the scope display, and manually operated the shutter at speeds of between 0.5 ... 1 second, so that with a pulse frequency of 20 Hz (50ms period), 10 ... 20 successive sweeps were recorded on the film. One of the first results, when pulses were transmitted on the 10-metre band (on 28.96 MHz) is shown in Figure 6. The direct pulse is on the extreme left with a half-height width of 3 ms and a rise time of about 2 ms. Further to the right we see echo pulses with a delay of between 12 ... 17 ms, thus with a spread in time of 5 ms, and also with large fluctuations in amplitude. When you look at the scope screen in real time, you'll notice a very turbulent display. Because the propagation speed of the wave is 300,000 km/s (the speed of light), one millisecond of delay corresponds with the wave covering a distance of 300 km. Therefore, a delay of 12 ... 17 ms corresponds with a distance of 3600 ... 5100 km. Because the wave travels to and fro, the actual distances between antenna and obstacle is half of this, that is 1800 ... 2550 km. The distance scale is annotated on the top edge of the screen. In Figure 2 there are two obstacles that could cause these echoes: the ionosphere at point 1, at distance a, and the earth at point P, at distance 2a. Calculations reveal that a distance a = 1800 km even with a take-off angle of b = 0° would correspond with a height h = 400 km, but at such a height there is no reflection. We must therefore conclude that we see an echo from the earth's surface. The first possibility occurs after one hop near point P. The to-and-fro distance covered by the wave between the ionosphere and the earth's surface is then 2a. That is longer than the distance measured over the earth's surface. Using Figure 3 and the Pythagorean theorem you can calculate

that when the wave is at height h = 200 km (F_1-layer) it is reflected and the hop distance is D = 1700 ... 2200 km. For the measured value of 2a and the given value h = 200 km we can also calculate the take-off angle of the wave of which reflected signals are observed, these lie between 3° and 8°. In Figure 7 are the results shown graphically of the calculations of take-off angle and hop distance as a function of the measured delay. Those calculated values are indicated with broken lines.

It is interesting to observe that from the maximum take-off angle at which echoes are still received, and the height of the ionosphere, an estimate follows also for the critical frequency f_c in comparing (1) with b = 8° and h = 200 km, you'll find from Figure 3 with Pythagoras: a = 74° and then from comparison (1): $f_c = f_{MUF}$ and cos a = 28.96 x 0.28 = 8.1 MHz. The inaccuracy of the measurement of the echo delay and the uncertainty of the value of h, lead to an error of about ± 1 MHz in this value of the critical frequency.

From where do these fluctuating echoes exactly come from? We saw from the large variations in time delay that they come from an area of substantial dimensions: about 2200 ... 1700 = 500 km deep in the direction of the wave. The half-power beam width angle of our beams are about 30°, and this provides, at a distance of 2000 km, a width of 1000 km perpendicular to the direction of the wave. For the chosen beam heading of 270°, the center of this area lies approximately at 27° North and 46° West, which is in the North-Atlantic Ocean, about 900 km North of the Azores.

If the ocean were flat in the area from which the wave is reflected, the wave would continue in a southwesterly direction and begin a second hop. On the surface of the ocean exist large and small waves; these have a changing angle with the horizontal surface. At various places and times, these angles become great enough to reflect the radio waves back into the direction from which they came. This effect is put to good use by radar systems that locate and track hurricanes, as described by Villard in QST (Ref 4). With such a system, even windspeed and force can be determined in a large number of places in areas of the ocean. The echo signal is always at least four S-points weaker than one that is returned after one hop (think of the signal strength of stations in Spain). This means, that, with ocean reflections, only about 1% of the electromagnetic energy (-20 dB) returns to us.

Now back to our own measurements. In December 1991 and January 1992, we made a large number of records of received echoes. Often in the 10-metre band, but also in the 15- and 20-metre band. A few special ones are reproduced here as follows. In Figure 8 we see a reflection from a Southerly direction (beam headings PA0FA and PA0ZX are both 180 °) of pulses transmitted on 28.96 MHz. These reflections are 'quieter' and of shorter duration than reflections from the ocean. From the echo delay (15.5 ± 0.7 ms) we see a hop-distance of D = 2200 ± 100 km, in Southerly direction. When we look in the atlas, we see the Atlas Mountains in Morocco, North Africa, which stretches out in an East-West direction. One high peak in these mountains lies 2275 km South of Groningen (latitude difference 53 North - 32.5 North = 20.5). The reflection disappears when the beam is turned 30 °.

In Figure 9, the beams are turned again to the West with a heading of 280 °, a frequency of 28.96 MHz, and an IF bandwidth of 3 kHz. Here, adjacent to the first reflection (12 - 20 ms) we see the second one distinctly (24 - 32 ms) and possibly something of a third one (38 -?). The second reflection at distance D = 3400 to 4600 km corresponds with two hops, the third one would agree with three hops, but this one lies deeply in the noise. In Part 2 we shall see how making the IF bandwidth much smaller, results in an improvement in the signal to noise ratio and late arriving reflections becoming more visible.

We have observed that the structure in time and amplitude of the echo signal varies strongly from day to day. Not seldom there are two peaks visible on the scope with steep wavefronts in the right direction (perpendicular on the transmit direction) as shown in Figure 6. These two peaks are separated by about 600 km. In addition, the difference in amplitude between the two peaks can vary strongly from day to day. While these in Figure 6 are a maximum of 0.8, in Figure 10 the variation is nearly 1.5. This could be caused by the amount of disturbance on the ocean surface, but also because of variations in the received signal strength because of changes in atmospheric conditions between PA0FA and PA0ZX

Postscript

This article was published earlier in *Electron* of September 1993, but with incorrect captions of the figures. Part 2 was published in *Electron* of October 1993

References

1 D. Rollema, Electron, Vol. 37 (1982) Page 562

2 D. Rollema, Electron, Vol. 40 (1985) Page 61

3 Instantaneous Prediction of Radio Transmission Paths, QST March 1952, page 11

4 Over-the-Horizon or Ionospheric Radar, QST, April 1980, page 39

5 Encyclopaedia Britannia, 1973/74 Vol. 9 page 813

6. Radio wave propagation and the ionosphere. Ya. L. Al'pert (Consultants Bureau, New York, 1963) page 316.

7 L.c. ref. 6, page 308

Other references:

Long-Delayed Echoes ... Radio's "Flying Saucer" Effect, QST May 1969, page 38

ar

Snail mail address for contributions: **The Editor**
Amateur Radio
34 Hawker Crescent
Elizabeth East SA 5112

email address for contributions:
edarmag@chariot.net.au

Andrews Communication Systems

ESTABLISHED 1976 ACN 001 968 752

NEW! ALINCO DR-620E Dual-Band Remote Mobile

Made in Japan quality

- ★ 2m & 70cm, 50W/35W, 200ch mem.
- ★ Dual In-Band Receive; V/U, V/V, U/U
- ★ AM Aircraft & FM Broadcast band receive
- ★ Large alphanumeric display. Not full duplex
- ★ Optional 9600/1200 bps packet operation
- ★ Optional direct GPS input for APRS
- ★ Optional DIGITAL voice communication
- ★ CTCSS & DCS & TCXO & Cloning feature

NEW LOWER PRICING

ALINCO DX-70TH

Made in Japan quality

HF+ 6m 100W ALL-MODE MOBILE

COMPACT REMOTABLE TRANSCEIVER HAS EXCELLENT RECEIVER, HIGH QUALITY TRANSMIT AUDIO, CTCSS PLUS 4 I.F.FILTERS **$1399**

- ★ DR-605EA TWINBANDER ...$799
- ★ DJ-V5EA WIDE Rx DUALBAND ...$499
- ★ DR-435E UHF 35W MOBILE ...$649
- ★ DR-135T 2m 50W MOBILE ...$399
- ★ DJ-X2000 HI-TECH SCANNER ...$899
- ★ DJ-X10 ALL-MODE SCANNER ...$749
- ★ DJ-X3 SMALL H/H SCANNER ...$349
- ★ DJ-X2 TINY H/H SCANNER ...$349

ALINCO RADIOS ARE MADE IN JAPAN!
3-YEAR FACTORY-BACKED WARRANTY!
FIRST & BEST ALINCO IMPORTER!

★ Tokyo Hy-Power Made in Japan

WORLD'S BEST AMATEUR LINEAR AMPS

Factory direct importer: www.thp.co.jp

ICOM

Made in Japan

2-year warranty

IC-706IIG HF

+ 6m, + 2m + 70m ALL MODE COMPACT TRANCEIVER **$2199**

OUTSTANDING PERFORMANCE
PLENTY OF ICOM AVAILABLE—CALL

KENWOOD

CALL FOR BEST PRICES

TELESCOPES

HIGH QUALITY

BEST PRICES IN AUSTRALIA

REFRACTORS

60mm $99, 70mm $179
80mm $299, 90mm $429, 102mm $749

REFLECTORS

76mm $99, 114mm $149, 130mm $299
150mm $499, 200mm $999. Dob's, too!

FACTORY DIRECT IMPORTER!

New Style BINOCULARS

- * 5 x 30 ...$19
- * 10 x 25RC ...$29
- * 12 x 32RC ...$39
- * 10 x 50RC ...$49

Breakthrough Pricing!
Guaranteed Hi-quality!
Factory Direct Importer!
Why pay more?

MOST EXC. COND. USED WARRANTY INC. (ex. o/P)

—ICOM—

IC-746	...$2399
IC-756	...$2499
IC-2100H	...$299
IC-575A	...$599
IC-910H	...$2499
IC-735 HF	...$699

—KENWOOD—

TS-690S/AT	$1349
TS-520 exc	...$349
TM-241A 2m	.$249
IF-232C	...$59

—MFJ—

Preselector 1040B	$179
80/40m, NEW	$299
NOISE BRIDGE	$129
TUNER 948	...$219

—AOR—

AR-8200II, mint	$799
AR-3000A, mint	$1100

—THP—

HL-82V 2M	...$199
HL-45U UHF	.$299
HL-60U UHF	...$349
HL-166V 6M	...$299
NICAD PACKS	...Call

—CODAN—

8528 + ANT	.$1499
8528 +P/S	..$1399

—MIDLAND—

70.265.48B	..$299

—ANDREWS—

DX-1600A	..$2999
DX-1600V2	.$4500
SPEAKER-MICS	...call
SLA Batteries	-$25ea

—NEW—

COAX SWITCH	$19
PATCH LEAD	..$5
SWR METER	..$15

MUCH MORE IN STOCK...Call

- ★ DIAMOND ANTENNAS
- ★ UNIDEN UHF CBs & SCANNERS
- ★ VOICECRAFT MICROPHONES
- ★ GARMIN GPS
- ★ AOR SCANNERS
- ★ YUPITERU SCAN.

SCOOP PURCHASE!

BP-196H NiMH BATTERY PACKS **$79 ea**
for IC-40S, etc
1,500mA/h, 9.6V (not $160)

MFJ

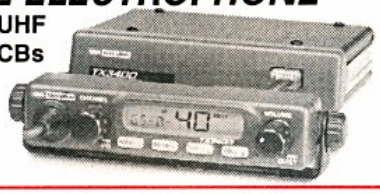
TUNERS from ..$249
ANALYSERS IN STOCK
ANTENNAS IN STOCK
SOUND CARDS IN STOCK
MASSIVE RANGE

PROUDLY MADE IN AUSTRALIA— **GME ELECTROPHONE**

- ★ TX-3400 .....$429
- ★ TX-3200 .....$329
- ★ TX-4400 .....$429
- ★ TX-6000 .....$479

TWO-YEAR WARRANTY
EXCELLENT QUALITY

UHF CBs



CALL (02) 9636-9060 or 9688-4301 or FAX 9688-1995

SHOP 8, 41—51 BATHURST ST, GREYSTANES, NSW 2145

Near Great Western Highway

Why pay more? MAIL ORDER TO PO BOX 240, PENDLE HILL, NSW 2145

Some items indent. Prices subject to change without notice - limited stock, some items. E & O E

Newsletters Unlimited A/AR/12X02

★ http://www.andrewscom.com.au ★ email: lee.andrews1@bigpond.com ★ all technical questions answered

Amateur Radio in Pakistan

Brenda Edmonds VK3KT

In June 2000 I had the opportunity to spend some time in Pakistan as a guest of the Principal of the Wahid Public School in Islamabad. June is the middle of summer in Pakistan, leading up to the monsoonal season in August-September. The weather was mostly very hot, temperatures up to 40 degrees C, with the land looking extremely dry and reservoirs very low. However any irrigated areas were very lush, and crops planted could almost be watched growing. I was surprised to see many of the roads lined with eucalyptus trees.

I had met with amateur operators from Pakistan during my visit to the IARU Region 3 Conference in Singapore in 1994, and had corresponded intermittently since then with my hostess and with AP2MY, Yunus Chaudhry, who is Secretary of the Pakistan Amateur Radio Society (PARS). Yunus was to spend a lot of time with me and contributed significantly towards my comfort and well-being during my stay. Through his arrangements, I met with AP2NK, Nasir Khan the President of PARS, AP2HA, Hasnat Bugvi the Treasurer and the society's patron AP2AGJ, Amir Gulistan Janjua and spent much time discussing matters of mutual interest.

A feature of my visit was my invitation to attend the Annual General Meeting of Pakistan Amateur Radio Society. This was held on the morning of the second Sunday of my visit (the date having been arranged to suit my itinerary). It was attended by about 40 amateurs, from areas around Islamabad and more distant parts of Pakistan. There are only about 170 licenced amateurs in Pakistan and an almost equal number of SWLs, but as the country covers about 800,000 square kilometres not all areas were able to be represented.

The meeting started with a reading from the Koran (Pakistan is predominantly Islamic), followed by the annual report prepared by the Secretary. This was followed by the customary annual reports and discussion of these. As there was no change of office-bearers there was no election, and the meeting proceeded to discussion of matters arising from the reports or raised from the floor. Luckily for me, most of the proceedings were in English. I was formally welcomed to the Society, and invited to address the meeting. I presented the society with some educational materials, badges and one of our 75th Anniversary medallions. After the meeting concluded all were invited to partake of an elaborate lunch, when I was able to talk briefly with some of the members.

Matters, which seemed to be of concern to PARS, were the low growth rate of the hobby and the poor acceptance of amateur radio by the authorities. They have plans for WICEN-type activities, but are being told "Now we all have mobile phones we do not need radios" Finances, of course, are a continuing problem. The society did not feel able to send a delegate to the IARU Region 3 Conference in Beijing or Darwin.

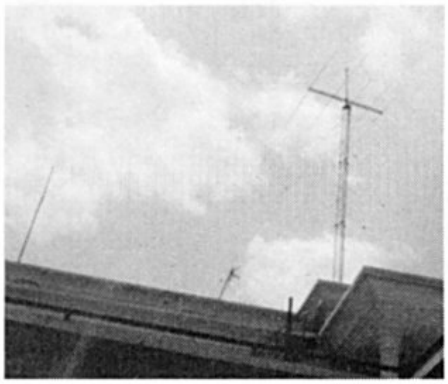
Yunus also took me to visit the clubroom of PARS which is established in part of the Wahid Public School. The school has a small radio group in training, which also uses the facilities there. Unfortunately I was not able to follow up the course details or speak to the students as we were there in vacation time.

On the social side, I met many of the relatives of my hostess, and was taken to see the local sights. The mountains, of course, were most impressive; especially the dwellings scattered over the hillsides among the trees. I found some of the roads a bit hair-raising, (not that I did any driving) but the traffic whilst intense was well-mannered and co-operative, one toot on the horn and the vehicle ahead pulled over to allow us to pass.

In all, it was a memorable trip and a great way to avoid some of the Melbourne winter. It is good to know that amateur radio is alive and well in Pakistan.

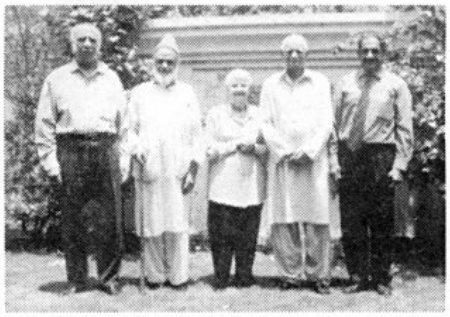
ar

PARS rooms (up top)



AP2AGJ antenna

Yunus AP2MY at station in PARS rooms



From left: AP2HA, AP2NK, VKEKT , AP2AGJ, AP2MY

A temperature-controlled crystal frequency calibrator

Drew Diamond, VK3XU,
45 Gatters Road,
Wonga Park, 3115

Apart from a legal requirement that our transmissions shall be confined to permitted amateur bands, operating prowess is greatly improved when we have an accurate knowledge of our transmitting and receiving frequencies. An increased need for exactness is driven largely by band-planning requirements, and by new modes, which demand high stability and narrow operating bandwidths. Technical satisfaction may also be a factor.

Contemporary radio transceivers provide the user with a digital display of operating frequency to a (generally) high degree of resolution- typically 1 or 10 Hz. However, such impressive displays may cause some complacency. To make full use of the precision offered, it is essential that the internal frequency reference (and hence the display accuracy) be checked regularly against some acceptable "standard" of accuracy.

For the last 30 or so years, Australian radio workers have had access to our own local time and frequency service; VNG. The history of VNG could be made the subject of a "Yes Minister" story – always the poor orphan kicked from pillar to post. By the time you read this, unless some extraordinary reprieve has occurred, we must somehow get along without a local (and therefore) reliable, accurate, simple to use, free-to-air time and frequency service.

Generally, we are not as interested in accurate time as we are in frequency. Time information, to fair accuracy, is available from the telephone network, the GPS system, the Internet and from short-wave services such as WWV and WWVH. Paradoxically for this age, local radio broadcast stations do not always send a time-signal (six pips, the start of the sixth being the hour) because they can no longer be guaranteed to be accurate.

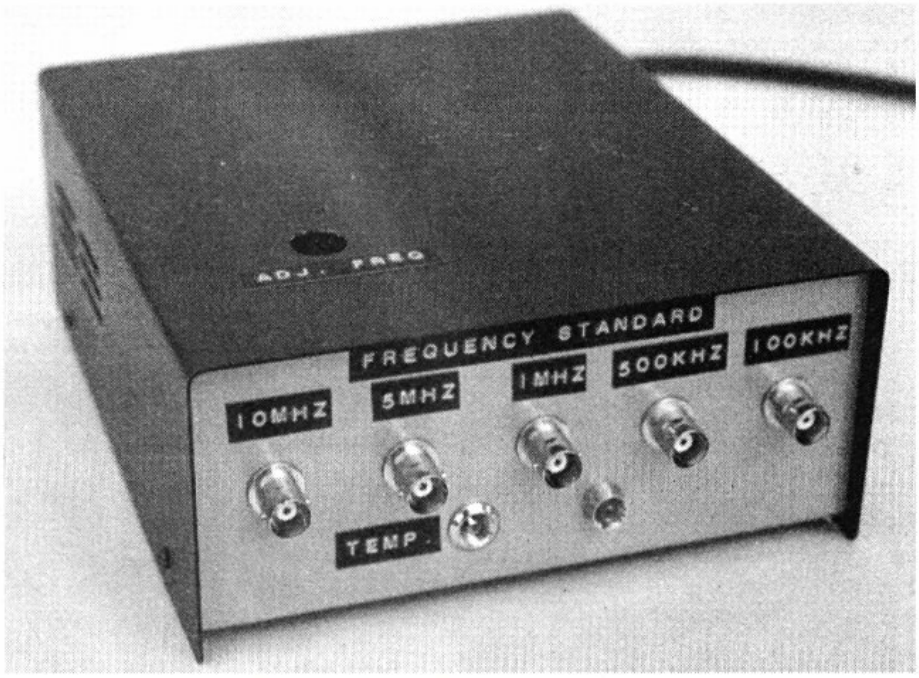


Photo 1. Crystal Frequency Calibrator

There are three perceived free sources of accurate radio frequency:

(1) AM broadcast transmitters. My local stations (near Melbourne), when compared against VNG, were found to be surprisingly accurate. In particular, the ABC transmitters on 621 and 774 kHz, with their well "aged" ovened crystals, were consistently within +/- 1 Hz of VNG. Of the dozen or so stations in ground-wave range, only one was found to be more than 3 Hz off nominal frequency. These would make fair (but not guaranteed) "consensus" references when taken as a whole. But consider; a combined reference and measuring error of (say) 2 Hz at 1 MHz would be 28 Hz at 14 MHz and 864 Hz at 70 cm. Is this good enough for the work in hand? Only you can tell.

(2) The Channel 9 TV network is believed to be locked into a rubidium frequency standard. Therefore the off-air 15625 Hz horizontal oscillator signal from a TV receiver may be used as a local reference to which a local oscillator may be locked (as described in Ref. 6). Whilst not intending to detract from this bright scheme, it is perhaps a little more elaborate than the average amateur requires. Incidentally, for rough calibration work, the 448th harmonic of the horizontal oscillator radiated from a nearby TV set gives a pretty good checkpoint at 7.000 MHz.

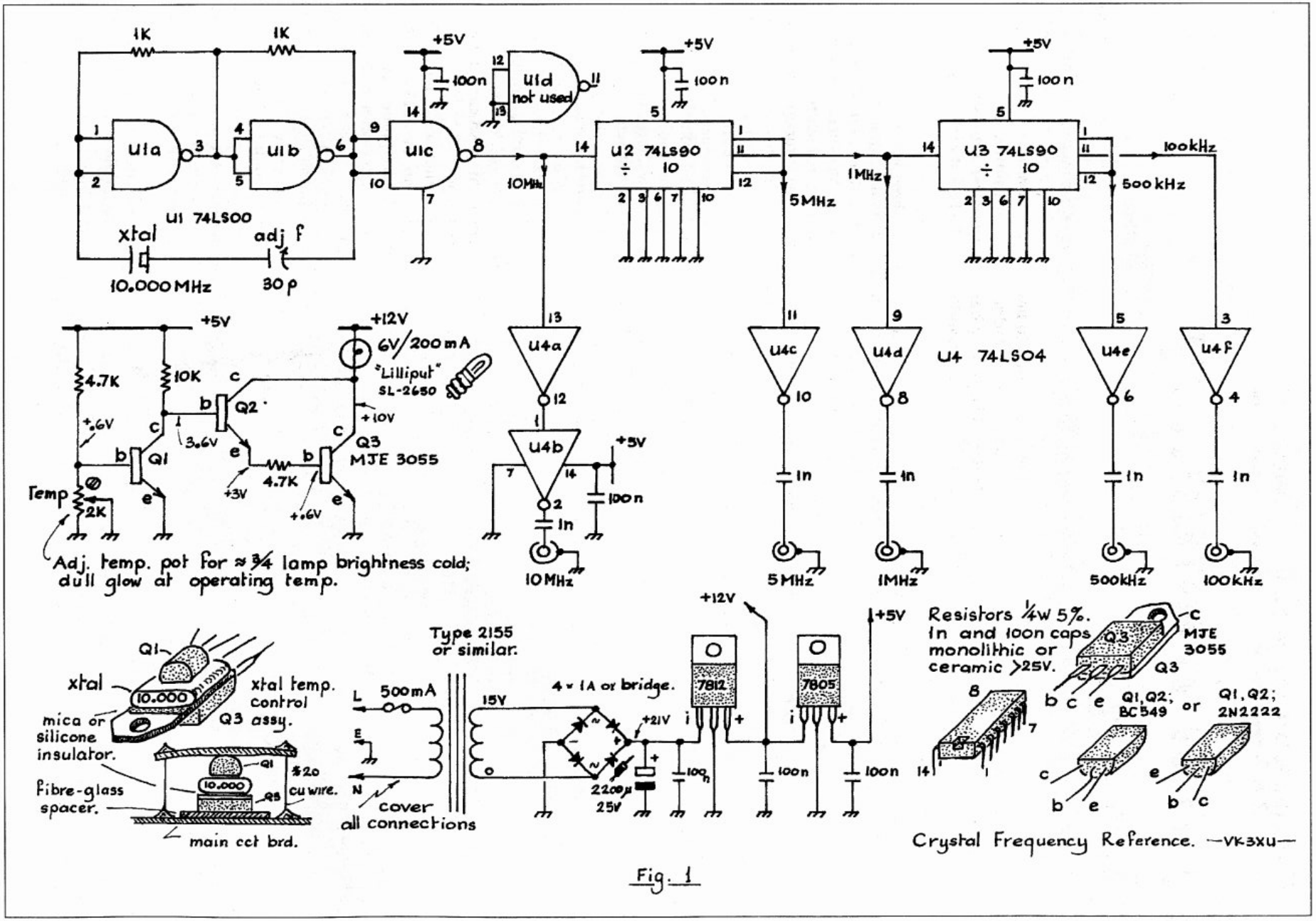


Fig. 1

Figure 1

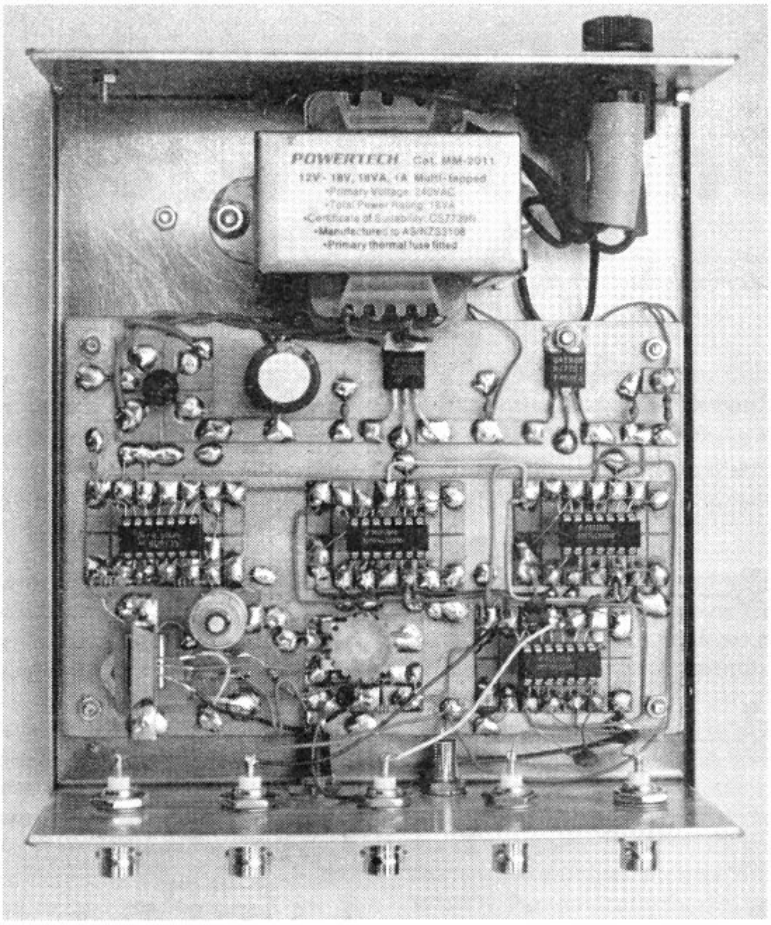


Photo 2. Internal view showing Paddyboard layout

(3) Short-wave time and frequency signals. WWV and/or WWVH are usually audible here late afternoons and well into the evening on 5, 10 and 15 MHz. With care, these transmissions provide adequate accuracy and reliability for amateur work. The main problem is phase fluctuations caused by multi-pathing (Ref 7). However, very acceptable accuracy can be achieved if these signals are used over a period of time. More later.

One of the simplest and most popular methods is to maintain a whole-number crystal, such as 10, 5, 4 or 1 MHz in a "crystal-calibrator" configuration (see Refs 1, 2 and 3 for typical circuits), and digital dividers to provide convenient ratios. In this model, a 10 MHz crystal is used to supply individual outputs at 10, 5, 1 MHz, 500 kHz and 100 kHz, harmonics of which are useable to at least 70 cm. To check a receive frequency accuracy at 432.1 MHz for instance, the 100 kHz output will furnish a signal of good strength against which the receiver's oscillator (or internal reference) may be adjusted for correctness.

A local crystal calibrator reference finds application in checking the accuracy of frequency displays and dials, oscilloscope time-bases, and in providing convenient signals for receiver calibration and alignment work. Instruments such as frequency counters may be checked for accuracy, and adjusted accordingly. By incorporating (optional) temperature control of the crystal, precise checks may be made during times when the primary radio reference is unavailable.

Circuit

An ordinary off-the-shelf 10 MHz crystal is maintained in oscillation by two nand gates of a 74LS00 logic chip U1a and b. The signal is buffered by U1c and applied to the first of two 74LS90 divide-by-ten chips, U2 and U3, to provide signals at 5, 1 MHz, and 500 and 100 kHz. Additional buffering of the 10 MHz and derived signals is provided by individual inverters of U4. Outputs are capacitively coupled to the output connectors to ensure a rich high-frequency harmonic content for radio work, and to provide the output buffers with a degree of protection from accidental shorts and external voltage sources.

The optional crystal temperature controller is closely based on Ian Pogson's clever simple circuit (Refs. 4 and 5). I hesitate to call mine an oven, for it was found in practice that in order to obtain close temperature control, a thermally insulated crystal enclosure was not necessary. As fully explained in Ref. 3, a less than ideal (i.e. cheap) crystal, if held at some temperature which is perhaps 10 degrees C higher than any expected ambient will provide a very satisfactory degree of stability.

The crystal's case is heated by being attached to an MJE-3055 (or similar) power transistor in a simple feed-back arrangement. Transistor Q1 is thermally coupled to the opposite side of the crystal, and is heated also. With an increase in temperature, the effective resistance of Q1 is reduced, therefore its collector voltage moves towards chassis potential, thus sourcing less current into the base of Q2, which in turn reduces base current in Q3, whose collector current (hence dissipation = temperature) is reduced accordingly. A "Lilliput" 6.3 V/200 mA pea-lamp is connected in series with the collector of Q3 to give a visual indication of operating temperature; bright glow when "warming up", dull when operating temperature is reached.

Regulated dc supplies of +12 V and +5 V are provided by 7812 and 7805 regulator chips powered by a conventional transformer and bridge configuration.

Construction

If the greater stability offered by the temperature controller is not required, the mains power supply may simply be omitted, and U1 - U4 powered by four AA cells (6V). Include a series 1A diode to protect against accidental wrong polarity.

All components, including the power supply bridge (or diodes) and regulator chips are accommodated upon a plain circuit board measuring 100 x 150 mm. Wiring style is not particularly critical, although a meld of 'Paddyboard' (see

Ref. 8) and 'ugly' is recommended (Photo 2) for reliable high-frequency operation. The four Schottky (LS) chips are fitted into 14-pin DIL sockets, each of which is attached with fine tinned copper wires upon a segmented 40 x 25 mm circuit-board substrate. They may be super-glued or soldered upon the copper side of the main board. Single-strand telephone or wire-wrap wire (also available from Jaycar; WH-3032) is ideal for interconnecting the chips, +5V supply line, and other low-voltage connections. Include a 100 nF ceramic or monolithic by-pass at the +5 V supply rail pin of each chip.

A metal case or box is suggested. That shown in Photo 1 measures 175 x 155 x 65 mm, which is a HB-5446 from Jaycar. But any similarly sized enclosure should do. Not a lot of internal heat is generated, so vent holes are not mandatory. The aluminium component of the HB5446 base is rather thin, and so a snug fitting strengthening member has been added to the prototype. The cover should have a hole to accept a plastic tweaking tool for adjustment of the crystal trim capacitor.

Connections on the mains (primary) side of the power transformer must be adequately covered to prevent accidental contact. For best long-term stability (and ready availability), it is recommended that the calibrator be run continuously. A mains switch is therefore not required.

Photo 3 shows a suggested method of assembling the temperature controller. It is made like a sandwich, starting with a rectangle of plain fibre-glass circuit board, then power transistor Q3 (heat flag upwards), TO220 silicone or mica insulator, crystal, transistor Q1, then the whole assembly held together with a small rectangle of circuit board attached to the main board with tinned wires, as pictured in Fig. 1. The crystal may lie along the power transistor, or at right angles (Photo 3) to suit your board layout. Q2, 2k trim-pot and remaining controller components may be wired upon a 9-land pad-board substrate.

Adjustment and Operation

Do a thorough parts placement and wiring accuracy check. Pay particular attention to polarised components-diodes, regulators, transistors and electrolytic. With all the digital chips removed; apply mains power and measure your +12 and +5 V supplies. Switch off and insert U1. If an oscilloscope is available, power up and apply the 'scope probe to pin 8 of U1 and observe a 10 MHz square waveform of about 4 V p-p. No 'scope? Listen for the 10 MHz signal on a nearby receiver. You may need to touch a screwdriver blade to pin 8 to radiate a signal.

Remove power and insert the remaining digital chips. Power on, and again using a 'scope, observe a waveform at each output connector- the 10, 5 and 1 MHz should be fairly square in shape, but the 500 kHz and 100 kHz will be "integrated" (spikey- rich in harmonics). If no 'scope, apply (say) the 100 kHz

continued next page

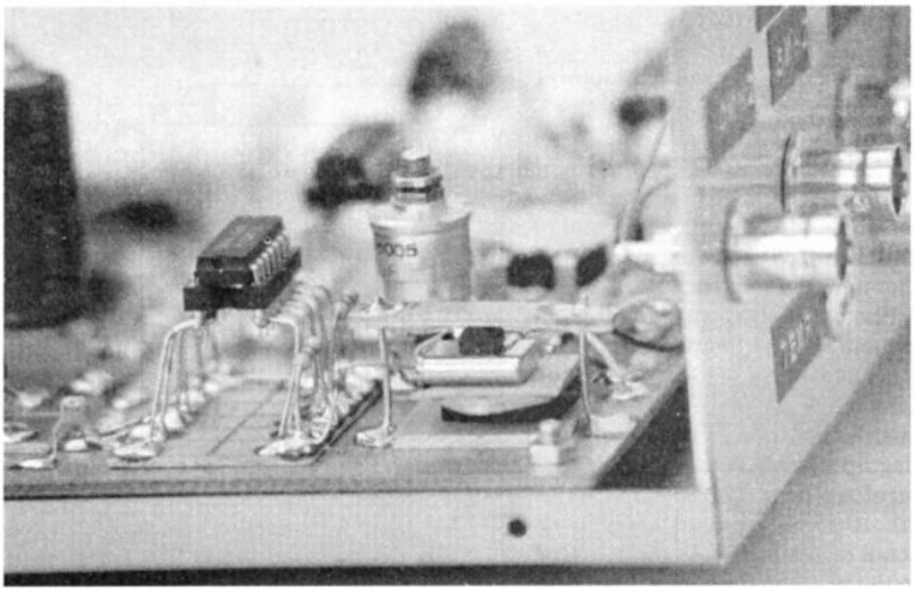


Photo 3. Crystal temperature control assembly

signal to your receiver's input and observe a mark every 100 kHz across the dial. Check the other outputs accordingly. When using (say) the 1 MHz signal- you may also hear the 500 kHz and 100 kHz marks, but at smaller strength.

From a cold start, adjust the temp. pot through its range and observe that the lamp may be varied from full bright to nil, then set the pot for about 3/4 maximum brightness. You can test the controller's operation by briefly touching a hot soldering iron tip to the plastic case of Q1; the lamp should quickly dim. Removal of the iron should cause the lamp to gradually brighten again. After some 5 minutes operation, the lamp should dim to an orange glow, indicating that the crystal is up to operating temperature. If a thermometer is available- apply the sensor to the crystal case, where a temperature of about 50 or 55 degrees C should be indicated.

The signal may usually be introduced into a HF transceiver's input by wrapping a few turns of hook-up wire (from the calibrator's output connector) around the outer braid of the antenna coax, thus no damage can be caused to the calibrator if the transmitter is accidentally keyed on. Fit the cover, and allow the crystal to reach operating temperature. Tune to the standard broadcast signal on 5, 10 or 15 MHz, initially in AM mode. Select the 5 or 10 MHz signal from your calibrator. Now, with an audible note of sufficient loudness, carefully adjust the crystal trim cap for zero-beat. A better method is to tune the broadcast signal on SSB, for a note of perhaps 800 or 1000 Hz, then adjust the trim cap for zero "burble" (like tuning a piano string). Be on guard for the modulation tone on the broadcast signal. At about 20 seconds before the minute there is a silent period (except for ticks), which is more ideal.

Let the calibrator run continuously, and gradually, day by day, re-check the setting of the trim cap, and so sneak up on a final setting. Over time, the calibrator should settle down, and achieve a day to day accuracy, which is very close, for all practical purposes, to that of the broadcast signal as received. With care, an accuracy of significantly better than one part in one million should be possible from here. No frequency hysteresis has been observed for the prototype. That is, if power is removed (typically overnight), the crystal frequency returns to the same value as before when operating temperature is reached.

Conclusion

For technical and operational reasons, radio operators and experimenters ought to accurately know transmitting and receiving frequencies. Therefore, a transceiver's internal frequency reference should be regularly checked against a standard of known exactness. A simple and cheap method is to use free-to-air broadcast frequency standards as primary reference. It has been shown that the signal frequency generated by an ordinary temperature-controlled 10 MHz crystal, when carefully adjusted against the primary reference over a period of time, may be used with a high degree of confidence to make accurate checks on radio frequency generating and measuring equipment at any time of the day.

Parts

No rare or special components are required- all are collectively available from our usual electronics suppliers, including Altronics, Dick Smith Electronics and Jaycar. For best frequency stability, an air-spaced 25 or 30 pF "beehive" style trim cap is recommended. These are available from Electronic World (039723 3860- will answer mail orders).

References and Further Reading

1. "A Simple Secondary Frequency Standard"; Brumbaugh, KB4ZGC, 73, Mar. '96.
2. "A Crystal Calibrator and Signal Source"; Diamond, AR, Oct. '87.
3. Test Equipment for the Radio Amateur; Smith, G4FZH, RSGB Publications.
4. "A Simple Temperature Controlled Crystal Oven"; Pogson, VK2AZN, E.A., Apr. '87.
5. "Omega-derived Frequency Standard"; Pogson, VK2AZN, E.A., May '87.
6. "TV-derived Time and Frequency Standard"; Jim Rowe, E.A. Oct '89 and Oct/Nov '93.
7. Frequency and Time Standards; Application Note 52; Hewlett Packard Co.
8. ""Paddyboard" Circuit Construction"; Diamond, AR, Feb. '95.

ar

Build an electronics set

your springboard into practical electronics

Peter Parker VK3YE
12/8 Walnut St, Carnegie, Vic, 3163
http://www.alphalink.com.au/~parkerp/

Fifteen or twenty years ago many people got their start in electronics with an electronics set. These sets included a selection of components wired to springs, all mounted on a plastic or cardboard base. Soldering was not required; connections were made by linking the springs with hook-up wire. Construction details for dozens of projects were provided, with sirens, Morse oscillators, flashing lights, crystal sets, timers and simple AM transmitters being popular.

These spring-based sets are still available and represent good value. However there is much to be said for building your own from scratch. It is not hard and parts are readily available. All that's missing is the instruction book. However suitable beginner circuits are available from those old '101 project' books or off the web, so it's easy to make your own instruction manual. The benefit of this is that you are no longer doing 'electronics by numbers' and are instead learning how to handle components, read their values and construct projects straight from the circuit. As a result you gain more skills and increased personal involvement.

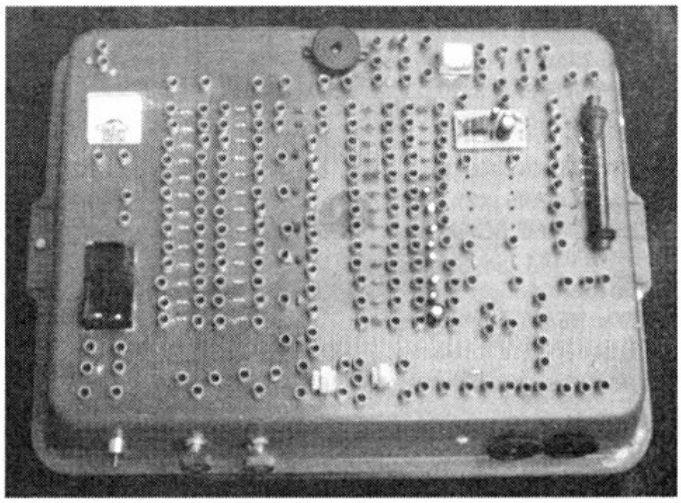


Photo: Completed Electronics Set

Assembly

Photo One shows how the electronics set is constructed. The components and springs are mounted on a plastic pet litter container. Another litter container, screwed to the other, forms the base. The result is a high base with a compartment for wires, earphones and circuit diagrams.

The choice of parts is up to the builder. The selection chosen will depend on the constructor's interests and whether the board is to be used for fun, education or prototyping. If the latter, a solderless breadboard or several IC sockets could be added to allow the use of extra components not included on the board. The parts list provided was used in the prototype and should prove sufficient for most purposes.

Possibly the most important part of the project is the springs. Calculate the number required carefully; there is nothing worse with having all components, but having insufficient springs to complete the project. The springs used came from DSE and are sold as accessories for their 'Funway One' kits.

Make a layout plan based on the size of your litter containers and the components at hand. Do not try to cram too much into too small a space; it is suggested that springs be at least 20 mm apart to prevent short-circuits.

The springs are passed through 3mm holes drilled in the base of the litter container. Because they are very tight, many torn fingernails will result if an attempt is made to find an end of the spring and push it through the hole. Instead use a small flat bladed screwdriver to do the job. When the end of the spring is through the hole, turn the spring until you have screwed about one quarter of the spring through the hole. This is a menial and time-consuming job, so is best spread over several days.

Next to each spring drill a small hole for each component lead. A 1.5mm drill bit is suitable. Ensure that the spacing is suitable for each component, particularly for transistors, LEDs and the relay.

Insert the components and loop the leads to connect with the underside of their respective springs. Use tinned copper wire to extend connections from the relay, meter, battery holder, power switch, potentiometers, ferrite rod taps and tuning capacitors to their respective springs. Two grommets are threaded over the ferrite rod to provide some separation between it and the plastic board.

With all electronic circuits correct polarity is important. This board is no exception. For the battery, meter, buzzer, electrolytic capacitors, LEDs and solar panels, make your connections so the positive connection is always the right hand terminal. For the transistors, make the connections like how the schematic symbol is normally drawn. For instance, have the base at 9 o'clock, the collector at 1 o'clock and the emitter at 5 o'clock. Similarly, orient the FET so the gate is at 9, the drain is at 1 and the source is at 5 o'clock.

Note the reference to the 'Champ' audio amplifier kit in the parts list. This is a low-cost audio amplifier module based on the LM386. This module was included because it is commonly available and cheap. Also the printed circuit board overcomes the difficulty of mounting small ICs on the litter

container. Of course to include this part of the project, you will need to know how to solder. If you can't solder this simple amplifier kit is a good starting point to learn.

Parts List

Resistors

Fixed: (5%, _ watt): 47, 100, 220, 470 (x2), 1k (x2), 2.2k (x2), 4.7k (x2), 10k (x2), 22k (x2), 47k (x2), 100k (x2), 220k (x2), 470k (x2), 1M (x2)

Variable: 10k, 100k

Capacitors

Disc ceramic: 22 (x2), 47, 100 (x3), 220, 470 pF, 0.001 (x3), 0.0022, 0.0047, 0.01 (x2), 0.022 (x2), 0.047, 0.1 (x2), 0.22 uF

Electrolytic: 1, 3.3, 10 (x2), 47, 100, 220 µF

Variable: 60/160 pF (x2)

Semiconductors

Diodes: OA95 (x2), 1N914 (x2)

Transistors: BC547 (x3), BC557 (x2), MPF102

ICs: MK484

LEDs: Red, Yellow, Green

Light dependent resistor

0.45 volt solar cells (x2)

Miscellaneous

1k-8ohm & 3k – 3k audio transformers, 8 ohm speaker, crystal earpiece, SPDT relay, piezo buzzer, ferrite rod (80 turns, taps every 10 turns), earphone socket, 250 uA meter, 'Champ' audio amp module, SPDT switch, battery holder for 9v battery, springs, hook-up wire with tinned ends

Some starter circuits

With the board now complete, the fun can begin! The circuits in Figure One, though bare-bones in their simplicity, have been found to work on the prototype board.

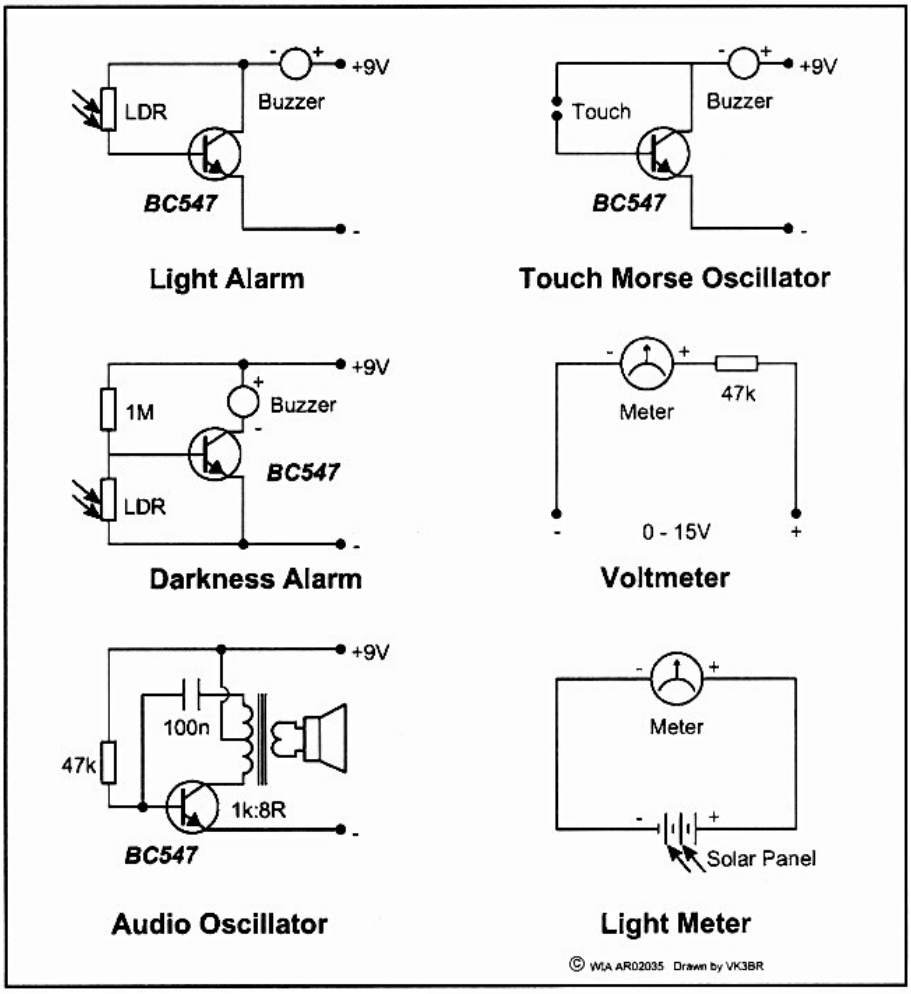


Figure One:

Conclusion

An old-style electronics set has been described. It will prove useful for prototyping, education and entertainment. It particularly lends itself as a club project or training aid as there are no parts to get lost. Also the use of available parts means that students can easily duplicate projects developed on this board at home, further adding to the board's educational value.

ar

Over to you

Mainland problems

My XYL and I have just returned from one of our annual trips up north and with our 2 metre rig in the car were looking to use IRLP to talk back to our 670 node here on the Tasmanian North-west Coast.

Node list at the ready! PROBLEMS – are these mainland nodes on 144 or 432?

Is trial and error the only way to find out? Talking to many mobile hams it would seem that 2 metres is the predominant rig used in travellers' cars but it would seem most IRLP nodes on the mainland are on 70cm. It would be VERY useful to have a frequency list for our Australian nodes or, better still, a standard band use. A check of the call-book shows 50% more 2 metre repeaters than 70cm. One comment was "We don't want to clutter up our 2 metre repeaters" – LAUGH – who has tried to get ANYONE to answer you on most repeaters?

Surely we are not the only ones to have experienced this problem. Any comments folks?

Ron Churcher, VK7RN.

"It's a great pity that Mr Cornish VK2KCN (OTU, P 53 November issue) doesn't abide by the credo so ably expressed by his mentors and noted in the last paragraph of his letter to you"

Having got that off my chest,

Regards

Don Jackson VK3DBB

Table of Allocation of International Call Sign Series

http://life.itu.ch/radioclub/rr/ap42.htm

*** Series allocated to an international organization.**

**** In response to Resolution 99 (Minneapolis, 1998) of the Plenipotentiary Conference (See Article 19) http://life.itu.ch/radioclub/rr/art19.htm**

Printed with Permission of the ITU

Call Sign Series	Allocated to
AAA-ALZ	United States of America
AMA-AOZ	Spain
APA-ASZ	Pakistan (Islamic Republic of)
ATA-AWZ	India (Republic of)
AXA-AXZ	Australia
AYA-AZZ	Argentine Republic
A2A-A2Z	Botswana (Republic of)
A3A-A3Z	Tonga (Kingdom of)
A4A-A4Z	Oman (Sultanate of)
A5A-A5Z	Bhutan (Kingdom of)
A6A-A6Z	United Arab Emirates
A7A-A7Z	Qatar (State of)
A8A-A8Z	Liberia (Republic of)
A9A-A9Z	Bahrain (State of)
BAA-BZZ	China (People's Republic of)
CAA-CEZ	Chile
CFA-CKZ	Canada
CLA-CMZ	Cuba
CNA-CNZ	Morocco (Kingdom of)
COA-COZ	Cuba
CPA-CPZ	Bolivia (Republic of)
CQA-CUZ	Portugal
CVA-CXZ	Uruguay (Eastern Republic of)
CYA-CZZ	Canada
C2A-C2Z	Nauru (Republic of)
C3A-C3Z	Andorra (Principality of)
C4A-C4Z	Cyprus (Republic of)
C5A-C5Z	Gambia (Republic of the)
C6A-C6Z	Bahamas (Commonwealth of the)
C7A-C7Z	World Meteorological Organization
C8A-C9Z	Mozambique (Republic of)
DAA-DRZ	Germany (Federal Republic of)
DSA-DTZ	Korea (Republic of)
DUA-DZZ	Philippines (Republic of the)
D2A-D3Z	Angola (Republic of)
D4A-D4Z	Cape Verde (Republic of)
D5A-D5Z	Liberia (Republic of)
D6A-D6Z	Comoros (Islamic Federal Republic of the)
D7A-D9Z	Korea (Republic of)
EAA-EHZ	Spain
EIA-EJZ	Ireland
EKA-EKZ	Armenia (Republic of)
ELA-ELZ	Liberia (Republic of)
EMA-EOZ	Ukraine
EPA-EQZ	Iran (Islamic Republic of)
ERA-ERZ	Moldova (Republic of)
ESA-ESZ	Estonia (Republic of)
ETA-ETZ	Ethiopia (Federal Democratic Republic of)
EUA-EWZ	Belarus (Republic of)
EXA-EXZ	Kyrgyz Republic
EYA-EYZ	Tajikistan (Republic of)
EZA-EZZ	Turkmenistan
E2A-E2Z	Thailand
E3A-E3Z	Eritrea
** E4A-E4Z	Palestinian Authority
FAA-FZZ	France
GAA-GZZ	United Kingdom of Great Britain and Northern Ireland
HAA-HAZ	Hungary (Republic of)
HBA-HBZ	Switzerland (Confederation of)
HCA-HDZ	Ecuador
HEA-HEZ	Switzerland (Confederation of)
HFA-HFZ	Poland (Republic of)
HGA-HGZ	Hungary (Republic of)
HHA-HHZ	Haiti (Republic of)
HIA-HIZ	Dominican Republic
HJA-HKZ	Colombia (Republic of)
HLA-HLZ	Korea (Republic of)
HMA-HMZ	Democratic People's Republic of Korea
HNA-HNZ	Iraq (Republic of)
HOA-HPZ	Panama (Republic of)
HQA-HRZ	Honduras (Republic of)
HSA-HSZ	Thailand
HTA-HTZ	Nicaragua
HUA-HUZ	El Salvador (Republic of)
HVA-HVZ	Vatican City State
HWA-HYZ	France
HZA-HZZ	Saudi Arabia (Kingdom of)
H2A-H2Z	Cyprus (Republic of)
H3A-H3Z	Panama (Republic of)
H4A-H4Z	Solomon Islands
H6A-H7Z	Nicaragua
H8A-H9Z	Panama (Republic of)
IAA-IZZ	Italy
JAA-JSZ	Japan
JTA-JVZ	Mongolia
JWA-JXZ	Norway
JYA-JYZ	Jordan (Hashemite Kingdom of)
JZA-JZZ	Indonesia (Republic of)
J2A-J2Z	Djibouti (Republic of)
J3A-J3Z	Grenada
J4A-J4Z	Greece
J5A-J5Z	Guinea-Bissau (Republic of)
J6A-J6Z	Saint Lucia
J7A-J7Z	Dominica (Commonwealth of)
J8A-J8Z	Saint Vincent and the Grenadines
KAA-KZZ	United States of America
LAA-LNZ	Norway
LOA-LWZ	Argentine Republic
LXA-LXZ	Luxembourg
LYA-LYZ	Lithuania (Republic of)
LZA-LZZ	Bulgaria (Republic of)
L2A-L9Z	Argentine Republic
MAA-MZZ	United Kingdom of Great Britain and Northern Ireland
NAA-NZZ	United States of America
OAA-OCZ	Peru
ODA-ODZ	Lebanon
OEA-OEZ	Austria
OFA-OJZ	Finland
OKA-OLZ	Czech Republic
OMA-OMZ	Slovak Republic
ONA-OTZ	Belgium
OUA-OZZ	Denmark
PAA-PIZ	Netherlands (Kingdom of the)
PJA-PJZ	Netherlands (Kingdom of the) - Netherlands Antilles
PKA-POZ	Indonesia (Republic of)
PPA-PYZ	Brazil (Federative Republic of)
PZA-PZZ	Suriname (Republic of)
P2A-P2Z	Papua New Guinea
P3A-P3Z	Cyprus (Republic of)
P4A-P4Z	Netherlands (Kingdom of the) - Aruba
P5A-P9Z	Democratic People's Republic of Korea
RAA-RZZ	Russian Federation
SAA-SMZ	Sweden
SNA-SRZ	Poland (Republic of)
SSA-SSM	Egypt (Arab Republic of)
SSN-STZ	Sudan (Republic of the)
SUA-SUZ	Egypt (Arab Republic of)
SVA-SZZ	Greece
S2A-S3Z	Bangladesh (People's Republic of)
S5A-S5Z	Slovenia (Republic of)
S6A-S6Z	Singapore (Republic of)
S7A-S7Z	Seychelles (Republic of)
S8A-S8Z	South Africa (Republic of)
S9A-S9Z	Sao Tome and Principe (Democratic Republic of)
TAA-TCZ	Turkey
TDA-TDZ	Guatemala (Republic of)
TEA-TEZ	Costa Rica
TFA-TFZ	Iceland
TGA-TGZ	Guatemala (Republic of)
THA-THZ	France
TIA-TIZ	Costa Rica
TJA-TJZ	Cameroon (Republic of)
TKA-TKZ	France
TLA-TLZ	Central African Republic
TMA-TMZ	France
TNA-TNZ	Congo (Republic of the)
TOA-TQZ	France
TRA-TRZ	Gabonese Republic
TSA-TSZ	Tunisia
TTA-TTZ	Chad (Republic of)
TUA-TUZ	Côte d'Ivoire (Republic of)
TVA-TXZ	France
TYA-TYZ	Benin (Republic of)
TZA-TZZ	Mali (Republic of)
T2A-T2Z	Tuvalu
T3A-T3Z	Kiribati (Republic of)
T4A-T4Z	Cuba
T5A-T5Z	Somali Democratic Republic
T6A-T6Z	Afghanistan (Islamic State of)
T7A-T7Z	San Marino (Republic of)
T8A-T8Z	Palau (Republic of)
T9A-T9Z	Bosnia and Herzegovina (Republic of)
UAA-UIZ	Russian Federation
UJA-UMZ	Uzbekistan (Republic of)
UNA-UQZ	Kazakhstan (Republic of)
URA-UZZ	Ukraine
VAA-VGZ	Canada

Table of Allocation of International Call Sign Series (continued)

Call Sign Series	Allocated to
VHA-VNZ	Australia
VOA-VOZ	Canada
VPA-VQZ	United Kingdom of Great Britain and Northern Ireland
VRA-VRZ	China (People's Republic of) - Honkong
VSA-VSZ	United Kingdom of Great Britain and Northern Ireland
VTA-VWZ	India (Republic of)
VXA-VYZ	Canada
VZA-VZZ	Australia
V2A-V2Z	Antigua and Barbuda
V3A-V3Z	Belize
V4A-V4Z	Saint Kitts and Nevis
V5A-V5Z	Namibia (Republic of)
V6A-V6Z	Micronesia (Federated States of)
V7A-V7Z	Marshall Islands (Republic of the)
V8A-V8Z	Brunei Darussalam
WAA-WZZ	United States of America
XAA-XIZ	Mexico
XJA-XOZ	Canada
XPA-XPZ	Denmark
XQA-XRZ	Chile
XSA-XSZ	China (People's Republic of)
XTA-XTZ	Burkina Faso
XUA-XUZ	Cambodia (Kingdom of)
XVA-XVZ	Viet Nam (Socialist Republic of)
XWA-XWZ	Lao People's Democratic Republic
XXA-XXZ	Portugal
XYA-XZZ	Myanmar (Union of)
YAA-YAZ	Afghanistan (Islamic State of)
YBA-YHZ	Indonesia (Republic of)
YIA-YIZ	Iraq (Republic of)
YJA-YJZ	Vanuatu (Republic of)
YKA-YKZ	Syrian Arab Republic
YLA-YLZ	Latvia (Republic of)
YMA-YMZ	Turkey
YNA-YNZ	Nicaragua
YOA-YRZ	Romania
YSA-YSZ	El Salvador (Republic of)
YTA-YUZ	Yugoslavia (Federal Republic of)
YVA-YYZ	Venezuela (Republic of)
YZA-YZZ	Yugoslavia (Federal Republic of)
Y2A-Y9Z	Germany (Federal Republic of)
ZAA-ZAZ	Albania (Republic of)
ZBA-ZJZ	United Kingdom of Great Britain and Northern Ireland
ZKA-ZMZ	New Zealand
ZNA-ZOZ	United Kingdom of Great Britain and Northern Ireland
ZPA-ZPZ	Paraguay (Republic of)
ZQA-ZQZ	United Kingdom of Great Britain and Northern Ireland
ZRA-ZUZ	South Africa (Republic of)
ZVA-ZZZ	Brazil (Federative Republic of)
Z2A-Z2Z	Zimbabwe (Republic of)
Z3A-Z3Z	The Former Yugoslav Republic of Macedonia
2AA-2ZZ	United Kingdom of Great Britain and Northern Ireland
3AA-3AZ	Monaco (Principality of)
3BA-3BZ	Mauritius (Republic of)
3CA-3CZ	Equatorial Guinea (Republic of)
3DA-3DM	Swaziland (Kingdom of)
3DN-3DZ	Fiji (Republic of)
3EA-3FZ	Panama (Republic of)
3GA-3GZ	Chile
3HA-3UZ	China (People's Republic of)
3VA-3VZ	Tunisia
3WA-3WZ	Viet Nam (Socialist Republic of)
3XA-3XZ	Guinea (Republic of)
3YA-3YZ	Norway
3ZA-3ZZ	Poland (Republic of)
4AA-4CZ	Mexico
4DA-4IZ	Philippines (Republic of the)
4JA-4KZ	Azerbaijani Republic
4LA-4LZ	Georgia (Republic of)
4MA-4MZ	Venezuela (Republic of)
4NA-4OZ	Yugoslavia (Federal Republic of)
4PA-4SZ	Sri Lanka (Democratic Socialist Republic of)
4TA-4TZ	Peru
* 4UA-4UZ	United Nations
* 4VA-4VZ	Haiti (Republic of)
* 4WA-4WZ	United Nations
4XA-4XZ	Israel (State of)
* 4YA-4YZ	International Civil Aviation Organization
4ZA-4ZZ	Israel (State of)
5AA-5AZ	Libya (Socialist People's Libyan Arab Jamahiriya)
5BA-5BZ	Cyprus (Republic of)
5CA-5GZ	Morocco (Kingdom of)
5HA-5IZ	Tanzania (United Republic of)
5JA-5KZ	Colombia (Republic of)
5LA-5MZ	Liberia (Republic of)
5NA-5OZ	Nigeria (Federal Republic of)
5PA-5QZ	Denmark
5RA-5SZ	Madagascar (Republic of)
5TA-5TZ	Mauritania (Islamic Republic of)
5UA-5UZ	Niger (Republic of the)
5VA-5VZ	Togolese Republic
5WA-5WZ	Western Samoa (Independent State of)
5XA-5XZ	Uganda (Republic of)
5YA-5ZZ	Kenya (Republic of)
6AA-6BZ	Egypt (Arab Republic of)
6CA-6CZ	Syrian Arab Republic
6DA-6JZ	Mexico
6KA-6NZ	Korea (Republic of)
6OA-6OZ	Somali Democratic Republic
6PA-6SZ	Pakistan (Islamic Republic of)
6TA-6UZ	Sudan (Republic of the)
6VA-6WZ	Senegal (Republic of)
6XA-6XZ	Madagascar (Republic of)
6YA-6YZ	Jamaica
6ZA-6ZZ	Liberia (Republic of)
7AA-7IZ	Indonesia (Republic of)
7JA-7NZ	Japan
7OA-7OZ	Yemen (Republic of)
7PA-7PZ	Lesotho (Kingdom of)
7QA-7QZ	Malawi
7RA-7RZ	Algeria (People's Democratic Republic of)
7SA-7SZ	Sweden
7TA-7YZ	Algeria (People's Democratic Republic of)
7ZA-7ZZ	Saudi Arabia (Kingdom of)
8AA-8IZ	Indonesia (Republic of)
8JA-8NZ	Japan
8OA-8OZ	Botswana (Republic of)
8PA-8PZ	Barbados
8QA-8QZ	Maldives (Republic of)
8RA-8RZ	Guyana
8SA-8SZ	Sweden
8TA-8YZ	India (Republic of)
8ZA-8ZZ	Saudi Arabia (Kingdom of)
9AA-9AZ	Croatia (Republic of)
9BA-9DZ	Iran (Islamic Republic of)
9EA-9FZ	Ethiopia (Federal Democratic Republic of)
9GA-9GZ	Ghana
9HA-9HZ	Malta
9IA-9JZ	Zambia (Republic of)
9KA-9KZ	Kuwait (State of)
9LA-9LZ	Sierra Leone
9MA-9MZ	Malaysia
9NA-9NZ	Nepal
9OA-9TZ	Democratic Republic of the Congo
9UA-9UZ	Burundi (Republic of)
9VA-9VZ	Singapore (Republic of)
9WA-9WZ	Malaysia
9XA-9XZ	Rwandese Republic
9YA-9ZZ	Trinidad and Tobago

Gippland Gate Radio and Electronics Club

AOCP/NAOCP Classes for 2003

From *March 17* - 2003, a Radio Class will be conducted by the Club at the Cranbourne Scout Hall on Monday nights

The course will take people through the fundamentals of radio and electronics theory. At the end of the course participants will be ready to attempt the exams necessary to obtain an Amateur Radio Operators license.

There are TWO points of entry into the course. STAGE 1 will suit those with no previous experience. On one night per week, over 9 weeks participants will learn the fundamentals of electricity and semiconductors. STAGE 2, which also lasts for 9 sessions, focuses on radio & communications topics, with transmitters, receivers, antennas etc. It will suit those with a background in electronics who wish to know more about radio topics or those with a Novice radio license who would like to upgrade to the full license standard.

The fee for the full course is $172 which includes Club membership for the 2003-2004 year. Those who wish to participate in the second stage only, pay $115. The classes will be from 7:00pm to 9:30pm on Monday nights. A $20 deposit is needed with the application to secure a position.

A $15 discount will apply to Juniors & Pension card holders.

Immediately following the course, an examination will be held at the same venue, for the full range of Novice theory, Full theory and Regulations topics.

For more information contact Ian Jackson, the Class Coordinator, on 5625 2545 or visit the GGREC website on www.ggrec.org.au .

Goulburn and Southern Highlands Amateur Radio Society Inc

Following the winding up of the Southern Highlands Amateur Radio Club, the Goulburn Amateur Radio Society has changed its name.

The club is now called the Goulburn and Southern Highlands Amateur Radio Society, and is seeking to build a viable social and technical forum for amateurs in the Goulburn and Southern Highlands areas of NSW.

A recent mail out of our newsletter to all amateurs in the Goulburn and Southern Highlands areas has been successful with 12 new members joining the society, and a number of others indicating their interest.

At recent meetings members heard presentations by VK2CSS on his life as a marine radio officer, and from VK2XCD and VK2AIJ on experiments with a 40 meter full wave sloping loop antenna on its fundamental and harmonic frequencies.

A number of interesting presentations are planned for coming months, and the next edition of our newsletter is due in December.

Our club net is at 9:00 pm local time, each Sunday night on 3.615 MHz, and all are welcome.

If you are interested in joining, and have not received a newsletter and application form, call the secretary Chris, VK2XCD, on 4822 4753, or write to the Goulburn and Southern Highlands Amateur Radio Society, PO Box 341, Goulburn 2580.

Chris Devery VK2XCD
Secretary
PO Box 341 Goulburn 2580

Midland Amateur Radio Club Inc.

Powercor donates computers to MARC

Victoria's largest electricity distributor, Powercor Australia Ltd has kindly donated computer equipment to the Midland Amateur Radio Club in Bendigo.

This valuable donation of computer equipment will enable the upgrade of the Packet Bulletin Board system run by Gordon VK3AH from his Heathcote QTH, and will enable other projects to be undertaken in the future.

The photo shows the computer being donated by Des Henderson of Powercor to the local packet bulletin board Sysop Gordon VK3AH.

Adelaide Hills Amateur Radio Society

The October meeting of AHARS was a "Show and Tell" evening, which, as usual, was very interesting.

We were shown a 6 metre transmitter of extraordinary robustness demonstrated by Graham VK5ZFZ, who will again be supplying the materials and instructions for a construction night to conclude the year's meetings, in November.

Jim VK5JST brought along a new power supply to which he gave the 'file' test. He ran a wire up and down a bastard cut file, which produced much spark power but did no damage to the power supply itself.

Steve VK5AIM had another portable device to show. This was a simple device to anchor a portable aerial in any weather conditions at all. Phil VK5NN

Continued on page 26

Winners at the Easter Urunga Convention 2002

Saturday

Event	First	Second
80 m hunt	VK2URK	VK3YDF
2 m Pedestrian hunt	3YDF	2YMW.
Junior event:		
80 m and 2 m	Karen O'Brien	Kelly O'Brien.
2 m	Mobile	3YDF 2KKT.
2 m	Talk in	2FA 3YDF

Saturday night consisted of rag chewing, cartoon classics and supper.

Sunday

Scramble	2FA	
Junior events:		
on 80 m and 2 m	Mitchell Guest	Sarah Piper
Last Junior event	Caitlin Williams	Mitchell Guest
2 m Mobile	2DGT	3YDF
2 m Pedestrian	3YDF	2KKT
2 m Pedestrian Talk in	3YDF	
Overall winner	3YDF	
Jack Gerrard Award	3YDF	
Senior amateur.	VK2UC, Lismore	
Longest distance travelled.	3YDF and 3YMG	

Lucky door prizes raffles and competitions were competed for and won, the weather was good except for a brief shower on Sunday afternoon where some competitors got a little damp. Everyone appeared to enjoy themselves. The Prizes were presented at the end of the day and many of the visitors stayed on to enjoy dinner together.

The committee is now working on the lead up to the 2003 Convention (April 19/20th) and hopes that the competition will be thick and strong for the events next year.

The juniors appear to have had a ball with Brian VK2BI in charge of their events. A lot of the juniors will soon be able to compete in the open events. Thank you Brian for your assistance at the "Urunga Do".

73 from the Committee at Urunga.

B.J.Slarke VK2ZCQ.

AHARS

Continued from page 25

also had aerials to show. These were the car aerials for all the HF bands he has used for many years. He was not sure how well they would go with a modern, all-electronic car but had a few basic modifications to the mounting arrangements that make it possible to use HF on any band regardless of the complexity of the car's system. He did suggest that if you wish to operate 40 or 80 metres while travelling along you devise an elastic arrangement from the tip of the antenna to the car. Heavy rubber bands are cheap and suitable.

Rob VK5RG showed some digital signal processing equipment that has applications to CW and other modes of operation.

The demonstration that won the prize for the night was the set of cross-field antennas made up by Lloyd VK5BR. Using the principles first described over 100 years ago he made up a 20 metre, 40 metre and 15 metre antenna using plastic sewer pipe and empty fruit or jam tins. Wires from the tins inside the pipes were linked in the right patterns to give these cross-field effects and were the only thing to be seen outside the pipes.

The antennas were each only a little more than a metre long and could be hung under the verandah or in a tree when in use and taken inside until needed again. This idea could be a very practical way to continue to enjoy your amateur radio in a retirement village or housing complex which will not allow masts or towers to be erected.

AHARS is fortunate to have so many clever experimenters in its ranks that there were actually too many 'show and tell' items to fit into one evening. Hopefully those who missed out this time will be able to show their items of interest next time.

The President and committee of AHARS send Seasons' Greetings to members and to all other amateurs. Anyone visiting Adelaide on the third Thursday of the month is welcome to visit our meeting held at the Blackwood High School. Please contact Geoff VK5TY or Alby VK5TAW for more details

ar

Over to you

The Future of Amateur Radio

The answer to your question (Oct. editorial) "What is Amateur radio today?" is at the top left hand corner of the editorial page; it is now as it was at the beginning.

Amateur radio is about setting up a radio station to transmit and receive on the ITU frequencies authorised for that purpose. "There is nothing – absolutely nothing –half so much worth doing as simply messing about in a radio shack". (Apologies to Kenneth Grahame).

In or out of it doesn't matter. Whether you get "on air" with phone, CW, computer aided or with some newer mode doesn't matter; you're always busy and you never do anything in particular and when you've done it there's always something else to do and you can do it if you like.

Editors and presidents come and go and each has a turn at worrying or predicting the future. Rest easy chaps, the future will be as Ratty as we can make it. We would rather not have you predict and establish your own preference.

Lindsay Lawless VK3ANJ

Technical Abstracts

Gil Sones VK3AUI
30 Moore Street, Box Hill South Vic 3128

Elevated Feed Antenna

An antenna for 160 metres and 80 metres suitable for a moderately sized yard was described in the Antennas column of Peter Dodd G3LDO in Rad Com July 2002. The antenna was designed by Colin Draper G3TSK. The antenna is an elevated feed design with a buried counterpoise and uses a loading coil to give resonance on 160 metres. The feed is with 50 ohm coax which makes it simple to use.

The antenna is shown in Fig 1. The counterpoise is made of insulated wire and is buried. The end of the counterpoise can be a fairly high RF potential and it should be taped at the end with insulating tape. The counterpoise is buried just below the ground to avoid tripping over it and to allow mowing the lawn.

The loading coil inductance is approximately 150 microhenries and is wound on a 21.5 mm diameter round former. The former is 250 mm long and the winding is 240 mm long. The four turns at the high end are spread over 10 mm and the three turns at the low end , nearest to the feedpoint , are spread over 6 mm. The winding is 292 turns of 21 or 22 SWG enamelled copper wire over a length of 240 mm with the main body of the winding close wound and the end turns spaced as described. The winding is coated with shellac and then wrapped with stretch rubber tape. While Shellac is still available you may find it easier to obtain clear lacquer for the coating.

The 68 foot (20.73 m) length should be adjusted for resonance on 80 metres and the end 12 ft 10 in (3.93m) length should be adjusted for 160 metre resonance. Resonance is found with a Dip Meter coupled to a two turn link at the feed point. The feed point impedance and hence the SWR can be adjusted by altering the length of the counterpoise. The original antenna could be adjusted for a low SWR allowing use of 50 ohm coaxial feed without the use of an ATU. The coaxial feed line should be coiled several times at ground level to choke off any antenna current which may be present on the feedline outer .

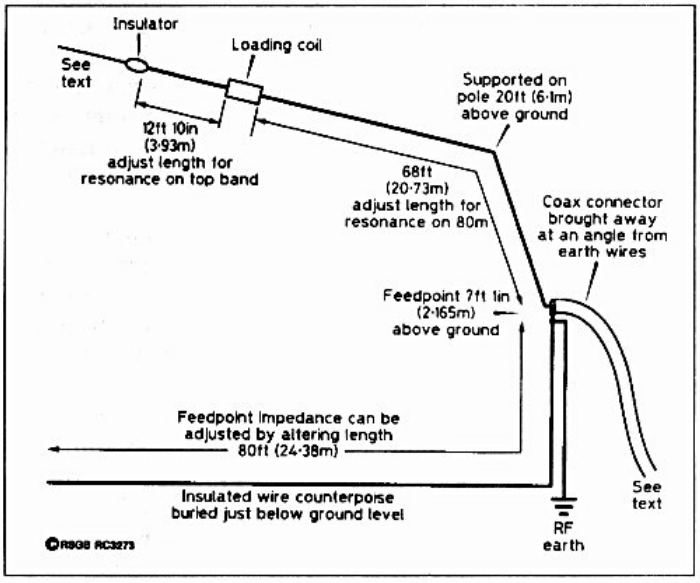


Fig 1. Elevated Feed Antenna.

Technical Abstracts

External GPS Antenna

While GPS may not be amateur radio it is used extensively by amateurs. GPS is used by APRS operators and is also used to determine operating locations for grid squares and for calculating the distances covered by contacts as well as other uses by amateurs. The hand held unit is often sufficient but sometimes an external antenna is useful such as when in a vehicle. The external antenna can be positioned so as to receive the satellites and the GPS can be positioned to suit the operator.

In QST October 2002 Mark Kesauer N7KKQ described a cheap homebrew external antenna for a GPS receiver. The antenna is housed in a radome made from a cream cheese container and uses a turnstile configuration. The turnstile dipoles are positioned a quarter wave above a ground plane made from tinplate or thin brass placed in the lid of the cream cheese container. The cream cheese container then fits over the antenna and acts as a radome.

The dipoles are supported on a parallel plate transmission line made out of PCB laminate which holds them a quarter wave above the ground plane. The transmission line is made from two pieces of 0.062 inch glass epoxy FR-4 or G10 single sided PCB laminate material glued together . The pieces are 0.25 inches wide and 2 inches long and when glued together form a 50 ohm line. The pieces of glass epoxy single sided laminate are shown in Fig 2 and Fig 3. The side which connects to the coaxial feed line inner is shown in Fig 2 and requires the foil to be etched or cut as shown. The dimensions are reasonably critical as this is a transmission line with the cut away part forming a microwave turn. You could etch the pattern or you could use a sharp knife or a Dremel tool to produce the simple pattern. The two pieces are stuck back to back with glue such as epoxy or superglue and form a transmission line. You could make them slightly oversize and then after glueing them together you could file them to the final dimensions .

The antenna construction is shown in Fig 4. The parallel transmission line post supports the turnstile elements above the ground plane. The transmission line post is soldered to the ground plane and the dipoles made of copper wire are soldered to the transmission line at the top which is a quarter wave above the ground plane. The ground plane which is 4 inches in diameter is cut from tinplate or thin brass and is fitted into the lid of the cream cheese container. The author used what looked like a Kraft Philadelphia Cream Cheese container . The silk screened label can be removed using automotive rubbing compound.

The dipoles are made from 14 gauge wire. Two 4 inch lengths of wire are bent into right angles at their exact centres. They are soldered to the opposite sides of the transmission line post at the 1.78 inch point so as to form two dipoles at right angles to each other with the ends of one dipole drooping down towards the ground plane at a 45 degree angle and the other dipole horizontal and parallel to the ground plane. The ends of the horizontal wires are trimmed to be 1.51 inches from the centre junction. The drooping 45 degree wires are trimmed to be 1.82 inches long from the centre junction. The ends of the drooping dipole should be about 0.5 inch above the ground plane.

The dipoles are cut so that the horizontal dipole centre impedances and phasing are right for circular polarisation and give an omnidirectional pattern. The feed is a self phased quadrature type which uses the dipoles tuning to provide both phasing and matching. The antenna matching can be tweaked by watching the GPS display and then bending the dipole ends up and

continued next page

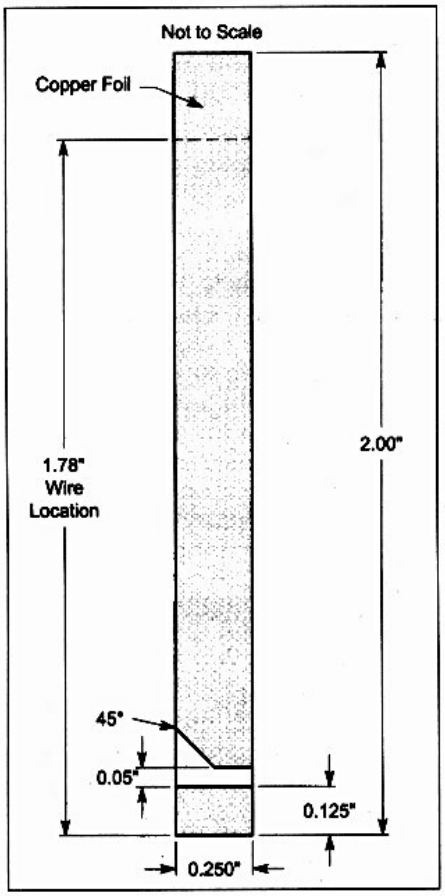


Fig 2. Active Side of Transmission Line.

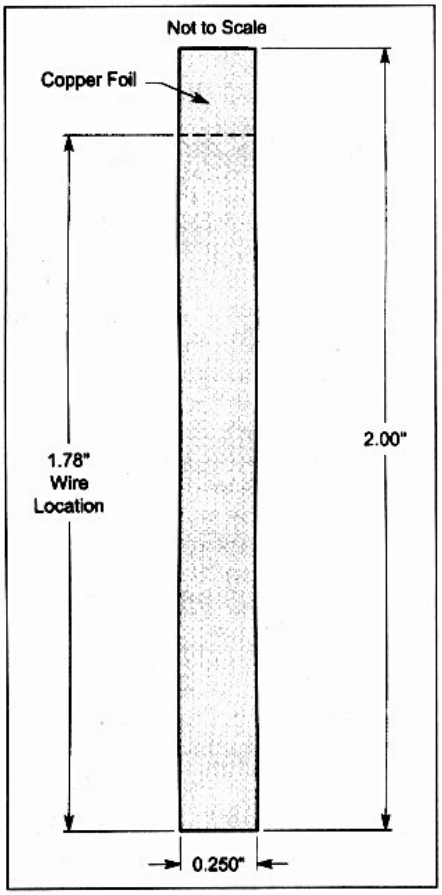


Fig 3. Ground Side of Transmission Line.

Simple CW Filter

A simple audio filter for CW reception was described by Fraser Robertson G4BJM in Rad Com August 2002. The filter is a simple series filter which helps to clean up the audio by attenuating noise above and below the frequency of the beat note.

The basic circuit is shown in fig 5. The inductor is a 47 mH one in the TOKO 10RB series. It is available in the UK from Farnell , part no 143-680, and RS , part no 228-365. Locally both Farnell and RS seem to use the same numbers and have similar stock.

A more complex design with a 700 Hz centre frequency and providing an alternative treble cut filter is shown in Fig 6.

The capacitors used are polyester types and should be readily available.

Both filters are designed to drive headphones. The author used cheap walkman style headphones which were of 32 ohm impedance. When these were connected in parallel they presented a 16 ohm impedance.

Mention was made of some rigs which provide a true stereo output from the headphone jack with main and sub receiver chains being fed to left and right outputs. If you have such a receiver then you will have to make arrangements accordingly and not just parallel them up. You could make two filters or just connect to the one you want to listen to.

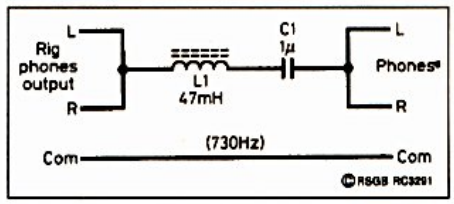


Fig 5. Simple Two Component CW Filter.

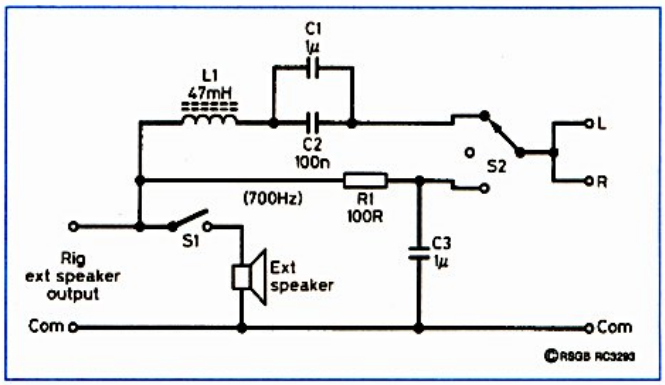


Fig 6. Deluxe Filter.

External GPS Antenna (continued)

down slightly to get the best signal.

The feed line used is small diameter 50 ohm Coax. At the GPS operating frequency of 1.57542 GHz the coaxial cable loss is high and so the minimum length necessary should be used. The connector used should suit the GPS receiver and should be of good quality.

Some GPS receivers have provision for disconnecting the internal antenna and using an external active antenna which is powered via the coax. This design does not draw any current and so the switching used needs to be triggered by connecting a suitable resistor between the coax inner and outer . A resistor between 1 and 5 kohm should be suitable.

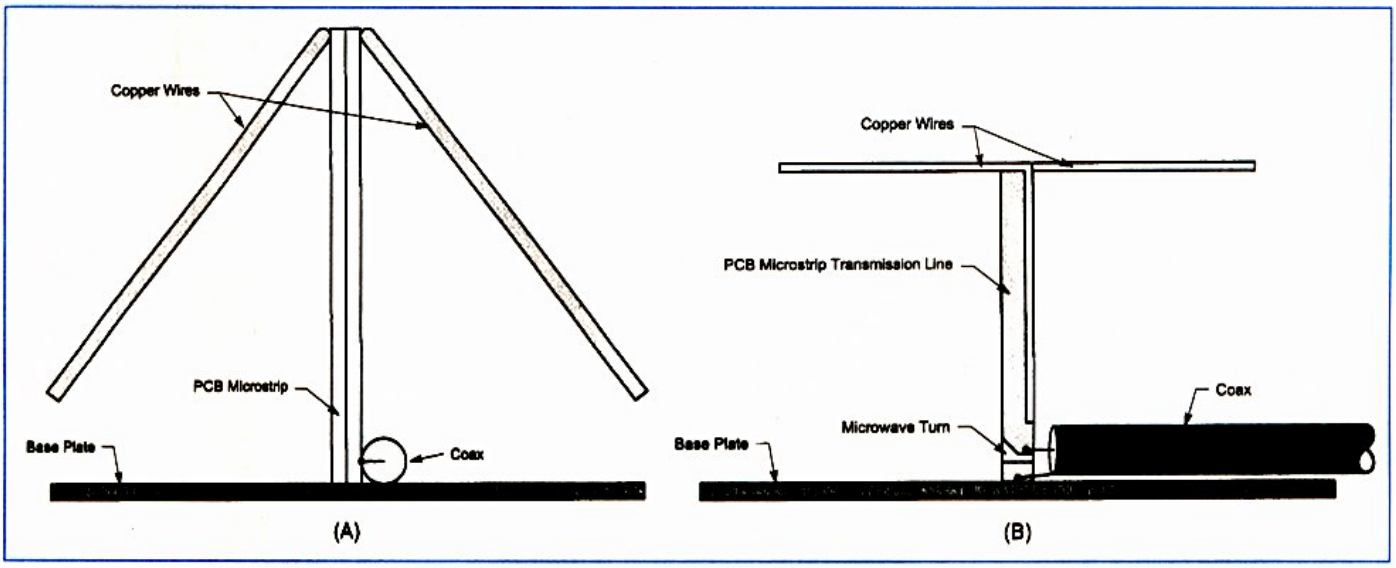


Fig 4. Side (A) and Front (B) views of Antenna showing Parallel Plate Transmission Lines and Dipoles.

QSL page

Ken Matchett VK3TL

A Truly Historic Event

2MT

It has been a very long time indeed since an amateur call-sign has been issued without any indication of the country of origin. In the days of spark, of course, and long before the official issue of internationally recognized call-sign prefixes it was common practice to use call-signs without prefixes, the only indication of the source of the transmission being the name of the country on the QSL card. Such cards might have printed on them 'Chile 3CR', 'French Station 8CO', the letters used often indicating the operator's initials.

The call-sign 2MT was used by Marconi's Wireless Telegraph Company. The station ran from February 1922 to January 1923, its main purpose being to advertise to the public the wonder of the recently invented means of communication 'Wireless'. Marconi's first successful attempt at long distance transmission was made on 12 December 1901, when a Morse signal was sent from Poldhu Point (the furthest suitable point in south-west England) across the Atlantic to Signal Hill, St John, Newfoundland. When, through the crackling noises in the receiver, the letter 'S' was received the whole history of communication changed within a moment. (The letter "S" was chosen to be sent since it was felt that the sending of any dashes might tax the transmitter!!)

Although the call 2MT at the time was a commercial call-sign rather than an experimental one, this same call-sign was issued in 2001 to the Chelmsford Amateur Radio Society to celebrate the 100th anniversary of this historic occasion.

Recent transmissions were carried out from the original Marconi New Street factory in Chelmsford, the location of the 1922 transmitter. Staff of the Marconi firm Mobile Limited also played a part in this historic event.

The front of the QSL shows Marconi himself in front of the receiver installed at Signal Hill, Newfoundland just after the successful Trans-Atlantic transmission. Also shown is the Marconi New Street factory as it is today. On the right (top) is shown the original '2 emma toc' transmitter, the 'Writtle Hut' (middle) from where the first regular public broadcasts were made and (bottom) the huge antenna array at Poldhu, Cornwall used to transmit the historic Trans-Atlantic message. (Bigger is better - don't worry too much about resonance!!)

WANTED

American QSL cards

We aim to collect all 3,100 or so QSL cards of all the American counties of the 50 States of the USA.
Can you help the WIA National QSL Collection along?

Postage refunded but please first telephone Ken VK3TL, Hon. Curator on 03 9728 5350.

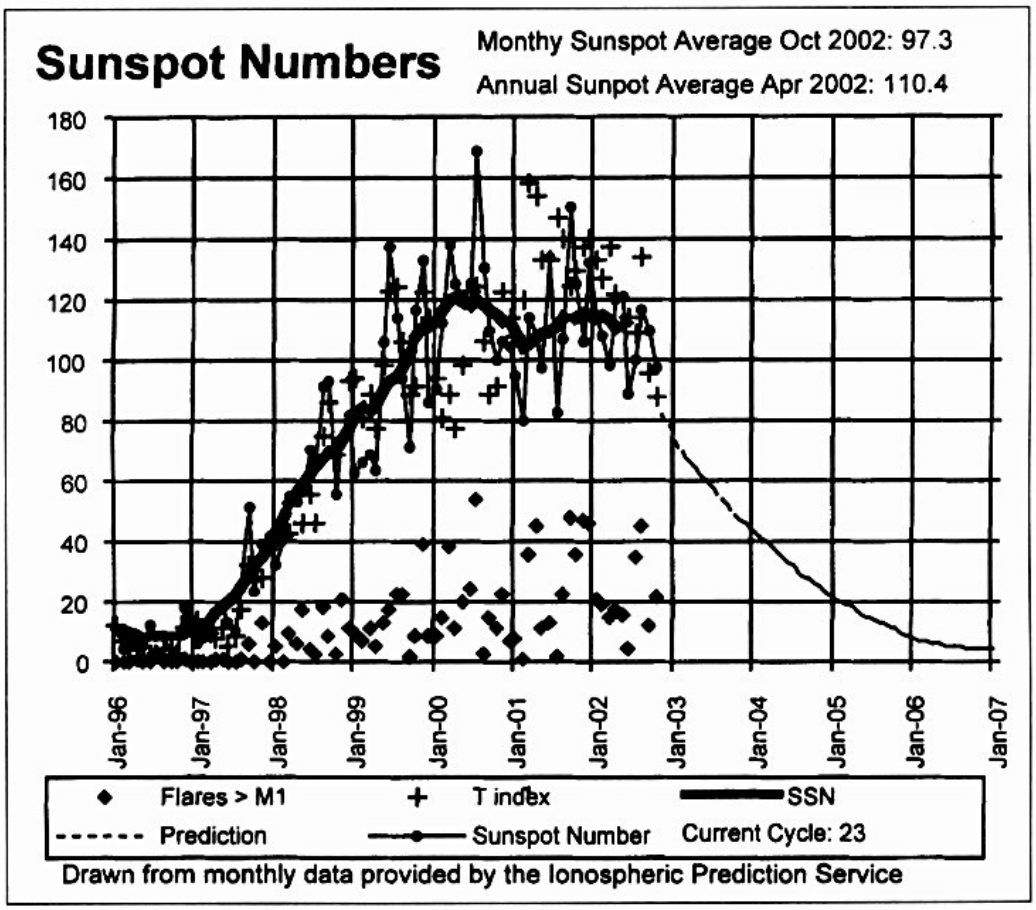
Hon. Curator: Ken Matchett VK3TL
4 Sunrise Hill Road, Montrose Vic. 3765
Tel: (03) 9728 5350

DFOBK

Apart from the prefix DJ0, other Federal Republic of Germany call-signs bearing the numeral zero may be regarded as special issue calls. This one is no exception since it was issued to Club station OV Backnang in order to celebrate the Trans-Atlantic transmission. Call signs DK0ANT and DF0ANB were also issued to radio clubs in Backnang and Offenburg associated with the firm Marconi Communications. It shows a rather younger Marconi than that portrayed on the first QSL. (Marconi was 27 years old at the time of the historic transmission.) The cleverly designed QSL also shows a map indicating the locations of both the transmitting and receiving stations.

Readers may find further information leading up to this historical event in the article entitled 'Pioneer of the Story of Radio - Guglielmo Marconi' by Wolf Harranth OE1WHC, which appeared in the September 1999 edition of AR.

ar



VK1 Notes

Forward Bias

Peter Kloppenburg VK1CPK

October was a significant month in the Division's calendar of events. First, there was the Jamboree of the Air (JOTA) on Saturday, the nineteenth, followed by the CQ WW DX contest on SSB during the weekend of the twenty-sixth, and to top it off, a presentation by Peter Stackpole (VK1RX), about time standards, at the general meeting on Monday, the twenty-eight.

JOTA was supported by the Division at Calwell thru Mike Thurgar (VK1TMT), Charnwood thru Neil Pickford (VK1KNP), and Farrer thru Richard Gard (VK1RG). About 250 Scouts, Guides, Cubs, and Joeys passed through the various events that were organised in these localities. Among other presentations, there were talks about old and new radios, the use of VHF and UHF in communications, and Citizen Band (CB) radio. Assistant Scout Leader, Richard Gard (VK1RG), and other licensed amateur radio operators demonstrated how to use transmitters and receivers on the HF bands. Sitting in front of a desk microphone, Scouts and Guides made radio contacts with other Scouts in Mumbai, Kazakhstan, and Alice Springs.

The Scout movement in Canberra had invited local politicians to observe JOTA activities first-hand, and to assist with burying a time capsule. Bill Wood, Minister for Urban affairs, made a short speech and turned the first sod. This particular event signified the fact that Scout Hall was build 30 years ago when the branch was known as 1st Farrer.

With a fridge full of food and drinks, three tower-mounted beams, four roof-mounted verticals, and an assortment of long-wire and dipole antennas, the CQ WW DX Contest got underway at the Parks & Garden Depot hamshack in Farrer, under the baton of Olaf Moon (VK1JDX) on Saturday, October 26, 2002.

Much preparation for this event had been made a few weeks earlier, even before JOTA started on 19 October. In fact, JOTA was the forerunner of the contest because the Division had committed itself to support JOTA in word and deed by setting up antenna masts and other radio equipment. There was, therefore, plenty of opportunity to check out the system and eliminate the bugs in preparation for the contest. To save time, a telephone line was established between Scout Hall and the depot to provide access to the Internet and, consequently, find out where and by whom QSOs were made. A server was used to drive six computers, one for each operator station in the depot to record QSO data. Radio equipment, lent for the occasion, worth thousands of dollars, linear amplifiers, and low pass filters to keep harmonics out of each other's hair, were used to cover the six bands that Olaf had planned for the event. The operator stations required kilometers of coax cable, mains power extensions, and dozens of mike-equipped headsets. It was, therefore, relatively quiet in the depot, and visitors were able to talk to each other in a normal level of voice. The result of all this effort was impressive: 380 QSOs were made across four bands being 10, 15, 20, and 40 metres. Given that this was the first contest run from the divisional hamshack, there was much success in the accumulation of points, new CQ Zones and countries, including 85 countries on 20 metres, 48 on 15 metres, 12 on 10 metres, plus three on 40 metres. 32 zones were achieved of the 40 around the globe. The final, and adequate, score was 212,000 points, in the section known as M2, or multi-two i.e. two transceivers, any number of operators, all HF bands with the exception of the WARC bands.

Olaf is planning to use the hamshack again next year and participate in the CQ WW WPX (Prefix) contest 29/30 March. However, between now and then, a few changes will be made in and around the hamshack to increase contest efficiency. A big thank-you goes to Phil (VK1ZPL), Phil (VK1DX), and Chris (VK1DO) for lending transceivers, and other valuable equipment for the occasion.

The following amateurs worked hard and spend much time, or provided encouragement, to make the contest a success: Olaf (VK1JDX), Kerry (VK1KRF), Tex (VK1TX), Peter (VK1KEP), Russell (VK1JRM), Bob (VK7KOB), Richard (VK1RG), Mike (VK1MJ), Chris (VK1DO), Lyle (VK1XLW), Gilbert (VK1GH), Brad (CB Operator), Ian (VK1ZCW), Phil (VK1DX), Phil (VK1ZPL).

Although John Harrison had to share the prize of 20,000 pounds for designing an accurate clock that could be used at sea in June 1773, Peter Stackpole (VK1RX/VK2RU) spend the same number in cents to design and build a frequency standard, with an output of one pulse per second, for experimental purposes. At the general meeting on Monday, October 28, 2002, Peter demonstrated his standard in front of 28 members of the WIA at Scout Hall. Peter explained how difficult it was to determine the standard's accuracy and stability over time. He had spend much of his time building a number of crystal controlled oscillators, comparing their accuracy and stability with WWWH, local ABC TV stations, and VNG at 2.5 MHz. All of these frequency sources had lower accuracy and stability than he required. Peter said that propagation delays were the main source of their instability over time. Eventually, he received a circuit for a frequency standard from Brook Sheares in the US that uses the GPS satellite as a standard of accuracy and stability. The design of this circuit provides for a much higher level of control of the crystal oscillator frequency, by the use of timing pulses from the GPS satellite. These pulses are used by a comparator to measures the difference between the pulses from the GPS and those produced by Peter's standard. Output from the comparator steers the Voltage Controlled Crystal Oscillator (VXO) to the correct frequency. The standard contains a VXO at 24 MHz, and an assortment of integrated circuits, including dividers, multipliers, and counters. Taking his home-built standard to the National Measurement Laboratory (CSIRO) in Lindfield, Sydney, for comparison measurement, short-term accuracy averaged at a frequency offset of 5 parts

in 10^{11}. For those who are curious about this expression, the following definition is quoted *: Frequency offset is the amount by which a frequency lies above or below a reference frequency. For example, if a frequency measures 1.000 001 MHz when compared against a reference frequency of 1.000 000 MHz, then its fractional frequency offset is 1 Hz/1 MHz or 1 part in 10^{6}.

* Hewlett Packard - Frequency and Time Standards - Application Note 52.

Falling ice-sheets, hail, and vandalism resulted in punctures of the repeater hut roof on Mt Ginini. However, a new roof has gone up by the time you read this. Luckily, no water damage had occurred to any of the radio equipment inside the hut, because the roof damage was reported almost as soon as it had occurred during one of the monthly inspection visits. The new roof has been re-designed to protect against falling objects and water penetration. This project was carried out by Alan Hawes (VK1WX), Gilbert Hughes (VK1GH), Paul Elliot (VK1TEE), and Phil Longworth (VK1ZPL).

Another recent divisional project worthy of mention is the 70 cm link upgrade in Wagga. The repeater uses a Motorola MSF-5000, a 4 x 4" cavity duplexer, and an RFI pre-amp. Transmitter output is 438.025 MHz at 70 watts, and receiver sensitivity is 0.15 mvolt for a 10-dB signal-to-noise ratio at 433.025 MHz.

Ex-CB operator, Bob Baker, has donated a trailer-load of radio parts to the Division. Interested? Come to the next Trash & Treasure sale. The next Trash & Treasure sale will be on Sunday, January 19, 2003 at the Parks & Garden Depot, Longerenong St. Farrer, starting at 12 noon. The next general meeting will be held at 8.00 pm, on Monday, January 27, 2003 at Scout Hall, Longeronong St. Farrer. Cheers.

VK3 Notes

By Jim Linton VK3PC
WIA Victoria web site: www.wiavic.org.au
email: wiavic@wiavic.org.au

Seasons greetings

The WIA Victoria Council extends its best wishes for the festive season, and a happy New Year – in this combined December and January issue of the VK3 Notes.

As we reflect on the influences and achievements in our lives over the past 12 months I am sure that it will be easy for most of us to see how rapidly our world can change.

The hobby of amateur radio is changing too. The predictions of years ago behind the slogan of "use it or lose it" are becoming a reality with the ACA earmarking 420-430MHz for public service and emergency services.

The WIA has responded to that situation by reshaping the 70cm band plan for the remaining spectrum of 430-450MHz.

While the ACA sees the lower 10MHz of the 70cm band being suited for other uses, the remaining Amateur Service secondary allocation 430-450MHz, shared with, among others, the Defence Department which has Primary status, seems not to be under such a threat.

The ACA has also earmarked 403-420MHz, which has 27,000 existing licences, to dovetail with 420-430MHz for a proposal globally harmonised emergency services band.

There are other winds of change for the Amateur Service. The Electromagnetic Radiation (EMR) regulations, put on hold by the ACA in 2002, will become a reality in 2003.

The World Radiocommunications Conference in June 2003 (WRC03) will be a watershed for the Amateur Service with significant changes certain to be adopted. Among these are the International Amateur Radio Union backed removal of the mandatory requirement for Morse code tests in amateur licensing.

There are others which are widely reported elsewhere, so no need to go into great detail here. What is interesting is that although the Morse code requirement is likely to end, it seems certain that VK radio amateurs will not benefit from it until early 2004.

WIA Victoria initially thought that such a delay could not be justified. However, in discussion with an ACA Senior Manager recently, it was learnt that the ACA had to wait the six months until the decisions of WRC03 are ratified.

The ACA will not implement WRC03 decisions until after that process is completed. It has a reputation within the Asia-Pacific region to adhere to ITU decisions, and for that reason is not willing to take what could be seen by Australia's neighbours as a premature or unilateral decision.

WIA Victoria understands the ACA's position. Unless there is a significant precedent set by other nations to remove the Morse code requirement ahead of the ratification of WRC03 decisions, then the existing VK no-code licensees will face a six month wait.

The year 2003 also includes the IARU Region 3 meeting in Taiwan to be attended by delegates of the region's radio societies including the WIA.

WIA Victoria Elmer Hall of Fame

Many of today's radio amateurs can attribute their involvement and enjoyment in the hobby to an Elmer.

The term "Elmer" describes experienced and knowledgeable individuals who are a mentor or teacher that encourages prospective radio amateurs, or the less experienced operator.

WIA Victoria encourages Elmering and through its Hall of Fame, pays tribute to Elmers, both past and present, who have assisted in the creation and imparted their knowledge to VK3 radio amateurs.

The first inductees to the Elmer Hall of Fame are:

- Craig McMillan VK3CRA (SK)
- Bill Trenwith VK3ATW (SK)
- Peter McDonald VK3DI
- Roy Haynes VK3RU
- Reg Whiting VK3MZ (SK)
- Fred Swainston VK3DAC
- Eric Jamieson VK5LP
- Ron Daniels VK3AEO
- Kevin McGrath VK3EQM
- Greg Williams VK3VT
- Howard Ryder VK3ZJT (SK)
- Neil Trainor VK3IJ
- Len Vermuelen VK3COD (SK)

The Elmer Hall of Fame includes citations for each of the inductees. It can be found at www.wiavic.org.au/news/elmer/

To make a written nomination by mail or email wiavic@wiavic.org.au and please put "Elmer" in the subject line.

WIA Victoria AGM

Advance notice is given that the annual general meeting for 2002 will be held on Thursday, 22 May 2003. A formal notice will be issued to members as required by the articles of association.

At the AGM the three year term of office for the WIA Victoria Council concludes. Nominations are invited for the 2003-2006 Council and they will close at noon on Friday 21 February 2003. Nominations will only be accepted on forms available from the Secretary.

It is important to remember that the WIA Victoria office will close at noon on Tuesday 17 December 2002 and re-open on Tuesday 4 February 2003.

During the holiday break office-bearers will be busy preparing the annual financial and other statements, and dealing with the auditors.

The WIA Victoria office number 9885 9261 will provide emergency telephone contact numbers. Fax facilities at the office will not be available at the office during the holiday period.

During the closure applications for membership and similar incoming mail will be processed. Apart from the Christmas, Boxing Day and New Year holidays, and the week in between them, urgent email will also be handled.

The final VK3BWI broadcast for the year is at 8.00 pm on Sunday 3 December. The broadcast will resume on Sunday 2 February 2003. Any material for the broadcast should be sent by post, or email to wiavic@wiavic.org.au

Callbook 2003

The latest edition of the Australian Radio Amateur Callbook is due to be available in early December.

The publisher advises that it is to include a free searchable CD which will have all of the data contained in the printed version, plus printable material such as greater circle information.

The Callbook has listings of 15,000 amateur stations, plus reference material - band plans, repeater and beacon list, DXCC countries list, and WIA exam team leaders.

The price for the Callbook/CD combined package is:

Members (Collected) $20.00

Members (1 book mailed) $23.50 (Extra postage for additional books)

Mail orders will be despatched as soon as Callbook stocks arrive.

VK6 Notes

Compiled by Chris Thomson VK6TNC.
Email VK6NOTES@wia.org.au

This has been a busy month in WA with the hosting of Hamfest and SEANET 2002, which were very successful. A debriefing meeting had not been held as this magazine went to press, so look forward to all the highlights in an upcoming issue.

Congratulations to all that participated in the Remembrance Day Contest and put VK6 well and truly back on the map.

The following stations are Certificate winners VK6AFW, ANC, CSW, JIP, VZ, ZBP and SZ. SZ is a Scout station based in Kalgoorlie, and was driven by VK6ZX Bill Main and VK6KYL Dianne Main.

Final planning is well underway for the 2003 training programme. Neil 6BDO will be at the blackboard. The course, running from January to December, contains modules for both Novice and Full Call theory, Regulations and Morse code. The WIA will subsidise this course to encourage newcomers to the hobby. The Courses are to be held at the Lynwood Scout Hall, which is situated in the Whaleback Golf course.

As a further inducement for newcomers, Council members agreed to keep the debate on a Foundation Licence alive. A working party has been formed to propose a new model for consideration. This grade of licence should offer people with an interest in radio an easy stepping stone to the world of amateur radio and all that it offers. Why use packet on CB when you can use packet on the International Space Station?

The Internet has produced almost instant communications, but at a cost. Instead of a local call to your ISP why not leave a radio on with your favourite frequency being monitored. Share this information with your friends and a radio net will appear on a regular basis instead of forwarded emails being the primary source of communications between regular contacts. I am sure your ISP will not go broke but the amateur bands will hopefully flourish with increased traffic.

Our President, Neil VK6NE has been approached by an Amateur operator in the northern suburbs whose mast has been the subject of complaint from neighbours. He has been requested to attend a "Mediation Meeting" a new approach regarding Local Councils. Some new housing estates in Perth do not allow a TV antenna to be visible from the roadside or satelite dishes for pay-tv. Hopefully this mediation process will introduce some common sense into the argument.

VK6SIG (Royal Signals Amateur Radio Society, Western Australia) has returned to the West after a 3 month trip away. The station was heard as VK6SIG/1,2,3,4 & 5 from 14 locations including the Cape York Peninsular and Thursday Island.

Malcolm, VK6LC, operated VK6SIG/p on CW and SSB during his holidays July to September 2002.

Any operators, and Clubs, outside the Perth metro area are encouraged to contact me regarding information for inclusion in this column.

VK7 Notes

QRM

For more years than some of us can add up (actually over thirty) the "Sewing Circle" has been held every evening between 5 and 6pm, EST or EAST. You get no prizes for guessing why some wit christened the get-together the Sewing circle. The big "Do" for the year is the November Sewing Circle Barbecue, for years held at the ranch of Bill VK7AAW at Sorell. Bill has shifted house and this year the venue was the village of Orielton at the home of Ken, VK7DY, and XYL Wendy. Voted a huge success, 71 attended – 38 amateurs from around the State and one, VK3FIM, Peter from the island up north. VK7DY generously donated a smoked Christmas ham to be raffled for our repeater funds – won by Devonport's VK7AY, Don. Don tells me it's frozen till he finds out the best way to cook it! Among the events was the presentation of the "Sewing Circle" annual trophy for outstanding support for the Circle by a participating member during the year. Murray, VK7MRY, was the deserving winner.

Rex, VK7MO ventured up Mt Wellington for the VHF/UHF field day. After setting up his gear half an hour before starting time, he gave a quick CQ call for a check on 144.1 and received responses from five VK2's with the best distance being VK2ZCV at Coffs Harbour. Following this a check on 432 produced VK2DVZ in Taree and two Sydney stations.

As predicted by Murphy's law, propagation to VK2 dropped away as soon as the field day started. However Rex made 50 contacts in the field day, most to VK3 on 144, 432, and 1296. Three VK3's and one VK7 were the 1296 contacts. Great work Rex.

The Novice "Cram Courses" are proving a boon to our efforts to get new Licences. Eight aspirants on the North West coast are scheduled to take their exams in mid- December.

Cheers for now, Ron VK7RN.

ALARA

Christine Taylor VK5CTY
vk5cty@vk5tty or geencee@picknowl.com.au

Season's Greetings to everyone

Dear OMs,

Here is a suggestion for you to get for your ALARA YL for Christmas. All the YLs who attended the ALARAMEET in Murray Bridge now have a black and yellow badge with their name and callsign (if they have one) on it. Mine is shown here so you can see what they look like. Everyone was thrilled that they will now be able to wear their own badge at all sorts of functions.

The ALARA Individual Badge

Dear YLs,

Why not buy your own ALARA badge and be able to show your affiliation wherever you go?

The cost is only $5.50 plus postage (they will fit in an ordinary envelope) and the people who make them are very quick so there could still be time before Christmas and there certainly will be time before the next issue of AR comes out.

My address is correct in the callbook.

After the ALARAmeet

Yes, life goes on after the MEET. Several of the ZL visitors stayed to attend state luncheons. In VK5 we had Eileen ZL1BRX and Jill ZL2BHJ as well as Tina VK5TMC, Jean VK5TSX, Maria VK5BMT, Meg VK5YG and Christine VK5CTY.

The YLs at the ALARAMeet

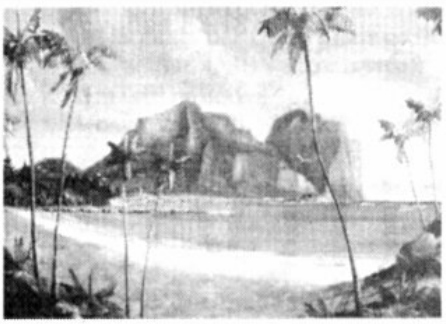
At the Melba Café in Melbourne they had Lee-Anne ZL2TLO and Jill ZL2DBO as well as Bron VK3DYF, Gwen VK3DYL, Mavis VK3KS, Jessie VK3VAN and Robyn VK3WX.

It was lovely to extend the friendship beyond the weekend in Murray Bridge.

Friendship is what it is all about.

Now everyone has gone home but the joy continues through emails and letters as well as talking on air.

Things to do



Lord Howe Island

It is now too late for your logs from the ALARA Contest. I hope you remembered in time. There is still time to send your log to Gwen VK3DYL for the special QSL card for Lord Howe Island or one of the Cook Islands. Keep her busy!.

The YLs on Lord Howe sent a very nice card with Raija to wish us all well in Murray Bridge. The photo on the left lets you see what the beautiful island looks like, in case you never have a chance to visit it.

Local publicity for ALARA

We were very pleased to have a reporter and photographer from the Murray Valley Standard come to our gathering on the Saturday afternoon. An item appeared in the next issue of the local paper with a photograph of the two local YLs, Meg VK5YG and Jennifer VK5ANW, with Jean VK5TSX (the State Rep and ALARA Co-ordinator for the MEET) and the two most distant DX visitors, Raija SM0HNV and Walli DJ6US.

No matter what information one supplies to the local newspaper people they do not always follow it up so this was very satisfactory.

Now the locals understand what all those cars with black and yellow ribbons on them were all about!

Notoriety in the most unexpected places

The National Archives in Canberra issue a small booklet three times a year. In it they stories of people who have made their mark in Australian history are retold. In the May 2002 edition (number 20 of the series) the story of Austine, the first VK3YL is told. To quote, "When other young women in the 30s were learning to twirl their strings of beads, pose with long cigarette holders and practise their Charleston, Mary Austine Marshall was teaching herself how to build and operate a wireless set"

The article follows Austine from that time through her enlistment in the Reserve of the Royal Australian Air Force in 1934, the first and only female to do so, to her career as an Aircraftsman (sic) in the Reserve, to her application to join RAAF. This seems to be the first time those in authority realise that Austine was a female. She was immediately discharged from the service, depriving the RAAF of a wireless operator of exceptional skill, purely on the grounds of her sex. What a fuss that would cause today!

Thanks to Bron VK3DYF for passing on to me that interesting copy of "Momento". We are proud that the contribution made by YL operators is seen as important enough to be acknowledged in a national publication such as this.

Robin L. Harwood VK7RH

Listening in to a troubled world

The US semi-clandestine Arabic station, "R. Sawa" is being heard here at 2100Z on a variety of channels, playing popular Arabic and American music. I am hearing it well on 11905 and 11895. It has a news bulletin at 45 minutes past the hour. This station, as previously reported, is on MW from Cyprus and Kuwait plus FM outlets in the Gulf and Amman in Jordan. This station apparently is a co-production of the VOA/RFE.

I recently obtained my copy of "Passport to World Band Radio 2003" and again it has been indispensable but not infallible. This year they have highlighted broadcasting from the Horn of Africa. I was surprised to read about the involvement of Sam Voron, VK2BVS, with some activities in Somaliland. Sam and I used to have a regular sked going back to the Australian Third Party Network (APTN) in the late seventies and early eighties. I had lost touch with him.

PWBR 20003 seems to have been underwritten by Grundig, as they have extensively advertised in this edition. I use the blue pages in the rear of the book to assist in the identification of broadcasters but as I noted earlier it is far from infallible, as are the contact addresses elsewhere. I obtained my copy of this 592 page edition direct from the publishers for $24.95 US from Passport 2003, IBS Ltd., Box 300, Penn's Park PA 18943 USA or check out their website at www.passband.com.

In mid October, the FCC in America decided to adopt IBOC as their platform for digital audio broadcasting. IBOC stands for In Band On Channel and is a commercial development of the Ubiquity Company. Basically the digital signal is transmitted in adjacent sidebands to the standard DSB or FM signal. Broadcasts have already commenced using IBOC on MW from WOR in New York on 710 kHz and the hash has been noted interfering with stations on adjacent channels. For that precise reason, IBOC on MW is only permitted to operate in daylight hours. It is very unusual that broadcasting has already commenced despite the absence of any commercial receivers or software. Analysts expect this to become available later in 2003-4.

The Europeans and the rest of the World have decided on DRM or Digital Radio Mondiale as their preferred platform. This mode is supposed to be on Long, Medium and Shortwave. DRM Test transmissions have been going on for some years on shortwave and regular broadcasting is supposed to start in 2003. MW testing has been in Berlin. I believe that selected monitors could obtain software to run off your soundcard for approximately $160 US but I am unsure how many were interested at that price.

A separate platform for VHF/UHF, known as DAB or Eureka 147 was also chosen by the EBU and has been in use there. Again suitable receivers are presently expensive, compared to the existing analogue models. Australia has been conducting consumer trials of DAB in the L-Band in the Sydney metropolitan region. Also it has been decided here that DRM will only be used in the shortwave range and that IBOC and DRM will not be on MW. DRM and DAB were political decisions, primarily in Europe, whilst IBOC has been commercially developed in the USA. Whether any of these digital modes will become a reality does depend on the commercial manufacturing of receivers. All three systems are incompatible!

One wag commented that there was no appreciable difference between DAB and the existing analogue FM as the programming choices were limited from both platforms. The major plus is that DAB/ DRM can add text-based information to complement the program. The existing analogue FM does have a system known as RDS with text such as traffic and weather alerts. You may have noted this facility on imported FM sets from Europe

I have personal reservations that IBOC and DAB will be around in 10 years time. DRM also is questionable as many broadcasters wonder about the viability of shortwave with declining listenership. DRM could work but you must remember that the largest audience for shortwave is not in Europe, America or even Australia but in Africa and Asia. A DRM receiver will be out of their price range compared to a much cheaper analogue model.

Well that is all for this month. All the compliments of the Season to you and hope that conditions during 2003 will continue to be fruitful.

73 de VK7RH

ALARA continued

JOTA

Frank VK2AKG took the opportunity in Murray Bridge to find out who would be likely to be running a JOTA station in a couple of weeks. I hope his groups made many contacts.

Mary VK5AMD, this year only had a group of young boys (she called them "sprouts" which is very appropriate, I think) who camped in tents on their property and enjoyed talking to other scouts as well as experimenting with some of the 'toys' Mary has made or had her 'children' make over the years. I am sure they had a great time.

Jeanne VK5JQ and OM Keith VK5OQ were up at Woodside in the Adelaide Hills again this year. They have two children, both involved in scouts and enjoy all the activities as a family.

No doubt there were several other YLs and families involved in JOTA but these are the only ones from whom I have any information.

ar

AMSAT

Bill Magnusson VK3JT

New AO-40 Control Stations take up duties

Colin Hurst VK5HI and Paul Williamson VP9MU have recently been included in the band of AO-40 controllers.

This will ease the burden on the other stations, particularly Graham VK5AGR who has been travelling and snowed under at work since returning to VK and James G3RUH who has been juggling his time between controller duties and house renovations. Colin has been mainly involved in attitude determination and has been putting his considerable programming skills to work in this area. It looks as though, at the time of writing, the attitude has been successfully moved to settings which should be able to be maintained in stable condition for some time ensuring good squint angles at perigee and therefore virtually optimum operating conditions. Now would be a good time to set up your station to cope with AO-40. Check out the AMSAT web site and in particular Steve, VK5ASF's very popular FAQ site at http://hamgate.apana.org.au/AO-40FAQ.htm

Brief Glitch in UO-22 Operations

UO-22 gave us all quite a scare recently when it suddenly disappeared from our computer screens. Its transmitter had shut down and it was a day or so before Chris Jackson was able to announce on the bulletin board that it would require some investigation to determine the exact cause. The investigation is still underway as I write this column and Chris has appealed to European stations in particular to refrain from uplinking so that the command station can complete the job. Hopefully UO-22 will be returned to full service before too long. Lots of people have come to rely on this, the first and now last of the original 9600 baud digital birds.

Useful Archive on the AMSAT web site

Satellite operators are reminded that the day to day "goings-on" on the AMSAT-BB bulletin board are archived at the AMSAT web-site.

The archive is very well done with message "threads" organised in an orderly fashion to make it easy to follow the threads. Often you find that a particularly interesting topic will come up as a result of an inquiry from a newcomer. By following a message thread right through some very useful hints and operating tips can be gleaned. Be warned however that a great number of BB users "shoot from the hip" and often it is wise to go towards the end of a particular thread to get the best information.

Phase 3D/AMSAT OSCAR 40/AO-40

Launched: November 16, 2000 aboard an Ariane 5 launcher from Kourou, French Guiana.

Status: The U/V/L-1/L-2 to S-2/K passband is active at various times.

Uplink:

V-band 145.840 - 145.990 MHz CW/LSB

U-band 435.550 - 435.800 MHz CW/LSB

L1-band 1269.250 - 1269.500 MHz CW/LSB

L2-band 1268.325 - 1268.575 MHz CW/LSB

Downlink:

S-band 2401.225 - 2401.475 MHz CW/USB

K-band 24,048.010 - 24,048.060 MHz CW/USB

AO-40 experimental transponder operation started on May 05, 2001 at approximately 08:00 UTC when the U-band and L1-band uplinks were connected to the S-2 transmitter passband downlink via the Matrix switch. The passband times have been shifted to MA 50-170 and the ALON/ALAT has been updated. ALAT has already been lowered considerably, accounting for the improved signals. As mentioned earlier, Colin VK5HI is the controller most involved in setting the attitude and checking for accuracy. Graham VK5AGR announced as this column was being prepared that the attitude had been made very favourable and is likely to remain so for some time. Scott, NX7U has a program that automatically calculates Uplink S/N against a supplied Nova for Windows orbital listing.

Download at: http://members.cox.net/nx7u/ao40/ao40v20_AutoSNR.zip

The popular "AO-40 FAQ", compiled by Steve, VK5ASF is now available at: http://www.amsat.org

Ground stations capturing telemetry from AO-40 are asked to send a copy of the data to the AO-40 archive at: ao40-archive@amsat.org. To keep up to date with the very latest transponder-operating schedule visit: http://www.amsat-dl.org/journal/adlj-p3d.htm

The AMSAT group in Australia.

The National Co-ordinator of AMSAT-VK is Graham Ratcliff VK5AGR. No formal application is necessary for membership and no membership fees apply. Graham maintains an email mailing list for breaking news and such things as software releases. Members use the AMSAT-Australia HF net as a forum.

AMSAT-Australia HF net.

The net meets formally on the second Sunday evening of the month. In winter (end of March until the end of October) the net meets on 3.685 MHz at 1000utc with early check-ins at 0945utc. In summer (end of October until end of March) the net meets on 7.068 MHz at 0900utc with early check-ins at 0845utc. All communication regarding AMSAT-Australia matters can be addressed to:

AMSAT-VK,
GPO Box 2141,
Adelaide, SA. 5001.
Graham's email address is:
vk5agr@amsat.org

Half-Yearly Update Summary of Operational Amateur Radio Satellites

Since this is a combined December and January issue of AR magazine I will include the normal six-monthly summary of operational satellites.

For the sake of brevity, I will not include satellites, which are spasmodically operational or have been inactive for some time. Full information an all amateur radio satellites, operational or defunct is available on the AMSAT web site.

International Space Station/ARISS

Worldwide packet uplink: 145.990 MHz FM
Region 1 voice uplink: 145.200 MHz FM
Region 2/3 voice uplink: 144.490 MHz FM
Worldwide downlink: 145.800 MHz FM
TNC callsign: RS0ISS

The ARISS initial station was launched September 2000 aboard shuttle Atlantis. ARISS is made up of delegates from several major, national Amateur Radio organizations, including AMSAT.

Status: Operational. Numerous contacts have been made with the ISS Crew.

Alain, IZ6BYY and Claudio, IK1SLD wish to announce the opening of the ISS Fan Club.

The ISS Fan Club is a free no-profit organization. The first 100 subscribers will receive by mail a nice picture of ISS Crew #1 signed by Sergei Krikalev and Yuri Gidzenko at the ISS Forum 2001 in Berlin. The official ISS Fan Club website is at: http://www.issfanclub.com ISS packet activity has resumed. If you wish to peruse packet operation with ISS a good discussion on its use is available at: http://www.rac.ca/arispak2.htm ARISS school contacts have resumed with the Expedition 5 crew of mission commander/U.S. astronaut Peggy Whitson, KC5ZTD, and Russian cosmonauts Valery Korzun, RZ3FK and Sergei Treschev, RZ3FU. An archive of school contacts can be found at: http://www.msnbc.com/news/505064.asp Before planning to make real-time contact with the ISS crew, consult their daily schedule of activity which can be found on the web at: http://spaceflight.nasa.gov/station/timelines/

The callsigns used on ISS are as follows:

U.S. callsign: NA1SS

AMSAT OSCAR 7 AO-7

Uplink:
145.850 to 145.950 MHz CW/USB Mode A
432.125 to 432.175 MHz CW/LSB Mode B
Downlink:
29.400 to 29.500 MHz CW/USB Mode A
145.975 to 145.925 MHz CW/USB Mode B
Beacon:
29.502 MHz, 145.972 MHz, 435.1 MHz, 2304.1 MHz
Launched:
November 15, 1974 by a Delta 2310 from Vandenberg Air Force Base, Lompoc, California.

Status: Semi-operational in sunlight. After being declared dead 21 years ago in mid 1981 due to battery failure, AO-7 has miraculously sprung back to life and was first detected by Pat Gowen, G3IOR on June 21, 2002 at 1728 UTC. Jan King, W3GEY reports AO-7 is running off the solar panels only. It will only be on when in sunlight and off in eclipse. Therefore, AO-7 will reset each orbit and may not turn on each time. On July 11, 2002 AO-7 was successfully commanded for the first time since it was declared dead 21 years ago. Commands were sent and accepted to change the CW beacon code speed. Command investigation continues. So far, 11 different commands have been accepted by AO-7. Tim, K3TZ has written a program to decode AO-07 telemetry. The program can be downloaded at: http://www.qsl.net/k3tz/files/K3TZ_AO-07_Telemetry_Decoder_0.5.zip

OSCAR 10 AO-10

Uplink:
435.030 to 435.180 MHz CW/LSB
Downlink:
145.975 to 145.825 MHz CW/USB
Beacon:
145.810 MHz (unmodulated carrier)
Launched:
June 16, 1983 by an Ariane launcher from Kourou, French Guiana.

Status: Semi-operational AO-10 has been locked into a Mode-B, 70-cm uplink and 2-meter downlink for several years but the old "war-horse" refuses to die and continues to give remarkably good service to the amateur radio community.

UoSAT-Oscar-14 UO-14

Uplink:
145.975 MHz FM
Downlink:
435.070 MHz FM
Launched: January 22, 1990 by an Ariane launcher from Kourou, French Guiana.
Status: Operational, mode J. Can often be worked with minimal gear.

Have you heard this week's Divisional Broadcast? See page 64 for times and frequencies.

Radio Sport RS-15

Uplink:
145.858 to 145.898 MHz CW/USB
Downlink:
29.354 to 29.394 MHz CW/USB
Beacon:
29.352 MHz (intermittent)
Launched: December 26, 1994 from the Baikonur Cosmodrome.
Status: Semi-operational, mode A, using a 2 meter uplink and a 10 meter downlink. This satellite still represents a great way to "get your feet wet" in amateur radio satellites

JAS-1b FO-20

Uplink:
145.90 to 146.00 MHz CW/LSB
Downlink:
435.80 to 435.90 MHz CW/USB
Launched:
February 07, 1990 by an H1 launcher from the Tanegashima Space Center in Japan.

Status: Operational. FO-20 is in mode JA continuously. Tak, JA2PKI, reported FO-20 control station operators believe that the UVC (Under Voltage Controller) now is regulating the transponder. The controller monitors battery voltage and tries to protect the batteries from over discharge.

UoSAT OSCAR-11

Downlink:
145.826 MHz FM (1200-baud AFSK)
Mode-S Beacon:
2401.500 MHz
Launched:
March 1, 1984 by a Delta-Thor rocket from Vandenberg Air Force Base in California.
Status: Semi-operational. OSCAR-11 is currently operating in a default mode, controlled by the watchdog timer. The satellite transmits continuous ASCII telemetry for about eight days on 145.826 MHz, followed by about 14 days of silence. However the mode-S beacon on 2401.5 MHz is ON continuously. At the present time, ground control are unable to command the satellite due to low temperatures affecting the command decoder. They will attempt to command the satellite when the command decoder temperature has risen to 15C. UO-11 is an old-timer. It is not a communication satellite, having just downlink capability but still has a solid following among the education fraternity who after almost 20 years still use its telemetry signals on a daily basis.

JAS-2 FO-29

Launched: August 17, 1996, by an H-2 launcher from the Tanegashima Space Center in Japan.
Status: Operational

Voice/CW Mode JA

Uplink:
145.90 to 146.00 MHz CW/LSB
Downlink:
435.80 to 435.90 MHz CW/USB

Digital Mode JD

Uplink:
145.850 145.870 145.910 MHz FM
Downlink:
435.910 MHz 1200-baud BPSK or 9600-baud FSK
Callsign: 8J1JCS
Digitalker: 435.910 MHz
http://www.ne.jp/asahi/hamradio/je9pel/

SO-41 SAUDISAT-1A

Uplink:
145.850 MHz
Downlink:
436.775 MHz
Broadcast Callsign: SASAT1-11
BBS: SASAT1-12
Launched: September 26, 2000 aboard a converted Soviet ballistic missile from the Baikonur Cosmodrome.
Status: Operational but intermittent. SO-41's downlink RF power is 1-watt with left-hand circular polarization. The uplink antenna (located on top of the spacecraft) is linear in polarization.

PACSAT AO-16

Uplink:
145.90 145.92 145.94 145.96 MHz FM (using 1200-baud Manchester FSK)
Downlink:
437.025 MHz SSB (RC-BPSK 1200-baud PSK)
Mode-S Beacon:
2401.1428 MHz
Broadcast Callsign: PACSAT-11
BBS: PACSAT-12
Launched: January 22, 1990 by an Ariane launcher from Kourou, French Guiana. Status: Semi-operational, the digipeater command is on.

UOSAT UO-22

Uplink:
145.900 MHz FM 9600-baud FSK
Downlink:
435.120 MHz FM
Broadcast Callsign: UOSAT5-11
BBS: UOSAT5-12
Launched: July 17, 1991 by an Ariane launcher from Kourou, French Guiana. Status: Operational and still carrying a good deal of international packet radio traffic through its "satgate" stations worldwide.

ITAMSAT IO-26

Uplink:
145.875 145.900 145.925 145.950 MHz FM (1200-baud)
Downlink:
435.822 MHz SSB
Broadcast Callsign: ITMSAT-11
BBS: ITMSAT-12
Launched: September 26, 1993 by an Ariane launcher from Kourou, French Guiana.
Status: Semi-operational, the digipeater function is on and open for APRS users.

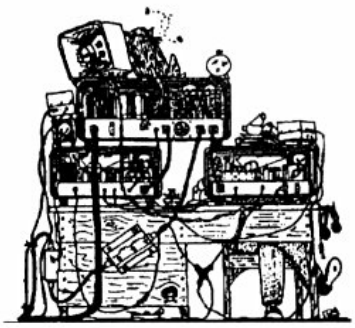
PCSAT NO-44

Uplink/downlink:
145.827 MHz 1200 baud AX-25 AFSK via PCSAT-1
Aux/Uplink:
435.250 MHz 9600 baud via PCSAT-2 (off)
APRS Downlink: 144.390 MHz (Region 2)
Launched: September 30, 2001 aboard an Athena-1 rocket from the Kodiak, Alaska launch complex.
Status: Operational. PCSat is a 1200-baud APRS digipeater designed for use by stations using hand-held or mobile transceivers. Downlinks feed a central web site < http://pcsat.aprs.org >. The APRS-equipped PCSat was built by midshipmen from the U.S. Naval Academy under the guidance of Bob Bruninga, WB4APR. A new version of Bob's telemetry decoding and operating program, PCSAT.EXE can be obtained at: ftp://tapr.org/dosstuff/APRSdos/pcsat017.zip

TIUNGSAT-1 MO-46

Uplink:
145.850 or 145.925 MHz 9600-baud FSK
Downlink:
437.325 MHz
Broadcast callsign: MYSAT3-11
BBS: MYSAT3-12
Launched: September 26, 2000 aboard a converted Soviet ballistic missile from the Baikonur Cosmodrome.
Status: Operational at 38k4-baud FSK with new imaging taking place fairly regularly.

ar



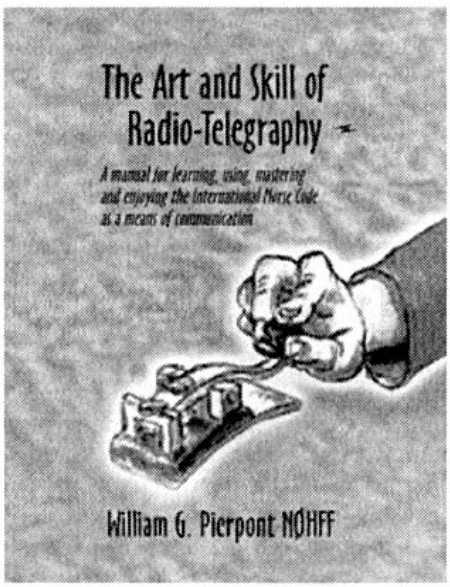
Alan Gibbs VK6PG
223 Crimea Street, NORANDA WA 6062
Email: vk6pg@tpg.com.au

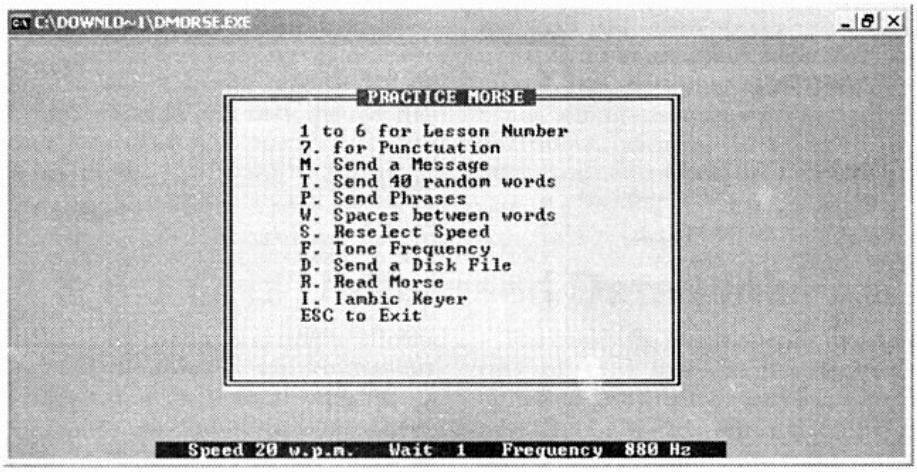
Part 21
Learning Morse Code

Morse Code has been the premier radio communications mode since the dawn of Amateur Radio. Even today, Morse is used extensively for long distance communication in conditions when most other wider bandwidth modes fail. However, some narrow band digital modes may have the edge in effectiveness, but the sheer simplicity of Morse Code means that it will remain popular in the Amateur Radio fraternity for many years to come. Learning Morse Code can be daunting for some but with the right motivation and a desire to succeed, it can be fascinating and fun to learn in a very short time. Modern computers, with free software can help in the learning process, particularly for people lacking access to a local radio club or an AR friend to assist with practice sessions. For first timers aiming at a full call licence, or the old timer wanting to brush up on some Morse practice - Computer Aided Instruction (CAI) is the answer.

Books and Publications

Over the last 50 years, dozens of good books have been written, some with tapes and CD's each claiming to be the best method to learn Morse Code. In the worlds military, Morse still remains an important skill for communicators even though modern data signals are used for regular traffic. Finding the right method to learn the code has remained illusive. However, a good book is a great start in studying the alphabet and numerals, followed by punctuation and Morse procedures. Remember that Morse is just a coded language with 26 letters and 10 numerals, and very easily learned to the level of precision needed to pass the Morse test for your full-unrestricted callsign.





Start with a copy of your society callbook and study the Morse letters and numerals first.

For the ultimate reading material try "The Art and Skill of Radio-Telegraphy" by N0HFF (1) that deals with the history, learning processes, and application of Morse Code in detail. The book is available via online ordering in both hard and soft covers, or free download in Adobe Acrobat (pdf at 990kb) format, and well worth the effort for newcomers or veterans alike.

One classic booklet by Margaret Mills, G3ACC "Morse Code for Radio Amateurs" published by the RSGB in 1964 was the ultimate at the time. However, better methods have evolved now computers have become the central focus in modern Amateur Radio Shacks.

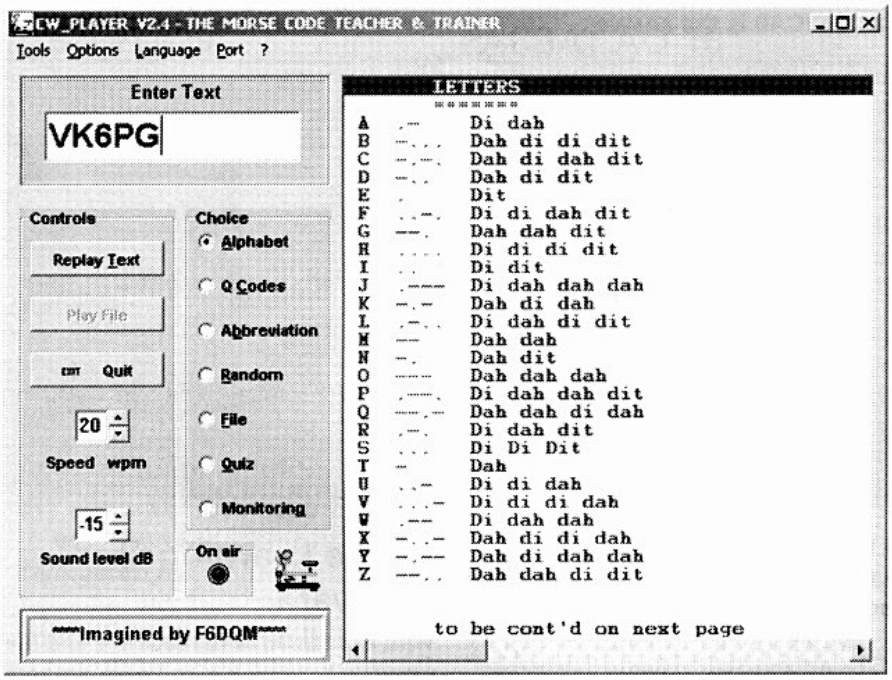
Morse Learning Software

With expansion of the Internet, and the assertiveness of RA software authors worldwide, there is a myriad of software available free for the asking online. Two Morse CAI programs have stood the test of time and very popular:

1. **DMorse** (61kb) by G0MDO (2) is a very effective DOS program for use on all computers including an old XT without a sound card. It will also run on the latest 2Gb, Windows XP machines with all the trimmings as well. DMorse uses the built-in computer loudspeaker and runs Morse at any speed between 5 through 50 words per minute. The DMorse Menu layout shown above offers most attributes needed to learn the Code - and remarkably simple to use.

2. **CW Player** is the popular Morse learning program (CAI) that's stable on all Windows-based operating systems and a delight to use. It even keys your transmitter, writes practice files, runs from 5-50 WPM, sends common Q-code signals, offers random letters, numerals, punctuations, gives callsigns and practice QSO procedures and much more! The software is downloaded from the Internet as cwplayer.zip (322kb) and self-extracting into a new folder. Simply run CWPLAYER.EXE from a desktop shortcut and the following screen is presented:

Just looking at the above menu for CW Player is exciting enough. "Click" on each of the letters and the character is played to your computer speakers. This will help you learn the code very quickly by repeating the letters until the sound becomes automatic. Type in some text in the upper left window and the characters are played immediately. Try the QUIZ that offers a score out of 100 when characters are displayed. You get three seconds to respond with the correct answer! Common Q-codes is another option which helps in quick recognition of regularly used Q-codes on air. Look for the practice QSO options, read a simple text file for practice sessions. CW Player will tell you when you are wrong - and ask you to try again until mastery has been gained. Start with the speed set to 5-WPM and work up through 12-WPM until proficiency has been gained. You can even write your own practice lessons and run each until you feel comfortable. For newcomers starting from scratch, at least 12-WPM should be reached with 100% proficiency within about six weeks.



For Contesters wishing to brush up with their speed reading problems, CW Player is ideal. By adding some background QRM, especially from a running contest, use the output from your station receiver added to the sound output of CW Player for some "real world" contest practice. For determined operators speeds of 25-WPM can easily be achieved under "contest" conditions commonly heard on the HF bands these days. CW Player will also play French and German languages for operators studying other languages or just want to rag chew with other European operators!

Ham Tip No. 21: Use CW Player to make Morse practice files for friends. It's much easier than recording audiotapes!

Ham Shack Computers, Part 22 next month "Computer Calibration" - a free program to properly test and calibrate your computer and screen display. This "must-have" free software called VGATEST.EXE will be available for download on the Ham Shack Computers Web Site.

(1) "The Art and Skill of Radio-Telegraphy" by N0HFF at: http://raes.ab.ca/book.html

(2) DMorse software at: http://www.rafars.freeserve.co.uk

(3) (CW Player software at: http://perso.club-internet.fr/f10rl/

(4) Ham Shack Computers Web: http://www2.tpg.com.au/users/vk6pg

73s de Alan VK6PG

ar

Over to you

Bad operating habits

I had just finished installing a new antenna. The CQ WW contest seemed to be the ideal opportunity to see how good it is. Everybody who came back to me gave me the same report - 59 even if they were only 4&4 or so with me. I asked one station who gave me the customary 59, what my REAL report was "5 and 3" he replied.

What is the point of giving a dishonest report? Even in the heat of a contest, and I have operated in many of them, it does not take much time to glance at your S meter. Some stations thanked me for giving THEM a real report.

I was also horrified by some of the language. One operator, unfortunately a VK, told a W operator to "move his arse off this frequency, I have been here all day." Also heard "that shows that cretins can own radios." There was also some outright swearing and profanity. This sort of behaviour is not confined to contests either, just listen to some of the DX nets or Dxpeditions.

If amateur radio is to survive we have to lift our game. If spectrum administrators heard some of the stuff that pollutes our bands they would almost certainly decide that the large amount of spectrum we occupy could be put to better use. They would probably be right!

Wayne Melrose VK4WDM
melrosew@optusnet.com.au

Contests

Ian Godsil VK3VP

Contest Calendar December 2002 to February 2003

Dec 6-8	ARRL 160 Metres Contest	(CW)	
Dec 14/15	ARRL 10 Metres Contest	(CW/SSB)	
Dec 21	OK DX RTTY Contest		
Dec 26-Jan 13	Ross Hull Memorial VHF Contest	(Nov 02)	
Dec 28	RAC Canada Winter Contest	(CW/SSB)	
Dec 28/29	Original QRP Contest	(CW)	
Dec 28/29	Stew Perry Top Band Distance Challenge	(CW)	
Jan 4/5	ARRL RTTY Roundup		
Jan 11/12	VHF+ Summer Field Day	(CW/SSB)	(Dec 02)
Jan 19	HA DX Contest	(CW)	
Jan 24-26	CQ 160 Metres Contest	(CW)	
Jan 25/26	Ref DX Contest	(CW)	
Feb 8/9	CQ WW RTTY WPX Contest		
Feb 8	Asia-Pacific Sprint 40-20 m	(CW)	
Feb 8/9	PACC Contest	(CW/SSB)	
Feb 8/9	RSGB 160 Metres Contest	(CW)	
Feb 15/16	ARRL International DX Contest	(CW)	
Feb 21/23	CQ WW 160 Metres	(SSB)	
Feb 22/23	REF Contest	(SSB)	
Feb 22/23	UBA DX Contest	(CW)	

Greetings to all readers...

As I start these notes we have just had the first leg of this year's Oceania DX Contest. I am pleased to report that the participation from DX stations was good as far as I could hear, including possibly an unusual station in P93 North Korea operating on 40 metres with a 4-element beam.

Recently I wrote on the technique of seeking new multipliers in order to boost the total score. This I was interested to hear many stations doing, including some of our own "big guns". I admit that I did so myself as much as I could.

However, it also came to me that when one is a low-powered station as I am, then it is possible to hear DX stations but not get back to them. If not very careful, this could lead to dejection and an early finish to one's participation. PLEASE DO NOT DO THIS!

In this situation, the time-honoured practice of working as many stations as possible (even when these are locals) is still quite valid. I was not at all unhappy with my small number of contacts by world standards. I used my skills and my station as well as I could. This, I believe, is what we should all aim for, not just in a DX contest, but in all contests — and in Life in general.

Novice Contest

Over recent years there has been a sharp decline in participation in the Novice Contest, to the point where the Westlakes Amateur Radio Club Inc. has decided to cease its sponsorship of this event. The results listed below are, therefore, the last that we shall see for this Contest.

This is very sad, but I take this opportunity to say a sincere thank you to the Club for its support over many years.

Finally

At the end of these notes notice is given of a new contes activity from South Africa. You may be interested to try this one, but please be aware that it will be on the same weekend as the Summer VHF Field Day.

As we reach the end of another year, thank you all for your interest and participation in contests in 2002. I hope that you will continue next year, even to the point of trying some new modes and associated contests.

73 and good contesting,

Ian Godsil VK3VP

Results Digital Mode Contest 2002

1st	VK3BGH	1,890 points
2nd	HP8AJT	385
3rd	OK1VSL	51
4th	VK4TJ	48
5th	VK3DY	24
6th	VK4FAD	6

On behalf of the CW Operators' QRP Club I thank all those who took part in this inaugural contest and sent their logs.

I found it most interesting that three of the six above logs were operators who were trying the digital mode for the first time. Now here is an excellent opportunity for many of the rest of us to do the same next year.

Graeme VK3BGH reported that the bands were open, but little activity outside 20 metres. Graeme has also offered to help organise next year's event.

Thanks to you all.

73 and good digital moding.

Ian Godsil VK3VP

Results ANARTS RTTY Contest 2002

from Jim VK2BQS and Colin VK2CTD

(VKs only — Place\Call\Points\Award)

Category A

5	VK2KM	19,816,776	5th World, 2nd OC, 1st VK2
6	VK4UC	17,577,864	6th World, 1st VK4
48	VK6GOM	5,204,750	1st VK6
156	VK2BQS	561,495	2nd VK2
159	VK2CTD	530,400	3rd VK2

Category B

2	VK4WPX	14,694,912	1st OC, 1st VK4

Comments: 240 logs were received this year, a record for our contest. However, the number of VK stations taking part was disappointing again this year.

Checking and processing of the logs revealed that there are many new stations taking part using Sound Card programs in lieu of traditional Terminal Units. I hope that this trend continues and brings many more contesters to the various RTTY contests. MMTTY seems to be the favoured software in use. However, there were problems, eg 20 logs with no calculation carried out at all.

The new programs operating through Sound Cards generated the majority of logs received with lack of data of some kind. Whether there is a problem with the Contest Log section of these programs is not yet clear.

Whilst email logs are fine and warmly welcomed, once again this year I received a variety of file formats, despite asking for Plain Text files.

Thanks to all for taking part. Next year's contest will be on 14/15 June, 2003.

Results Novice Contest 2002

from Westlakes Amateur Radio Club

1st	Terry	VK2KTD	SSB	111 points
2nd	Chris	VK2LCD	SSB	71 "
3rd	Ian	VK3JS	CW	50 "
4th	Chris	VK2MQX	CW	42 "

Keith Howard Trophy for Novice with highest SSB score to Chris Meagher VK2LCD

Clive Burns Memorial Trophy for Novice with highest CW score to Chris Thompson VK2MQX

Results Oceania DX Contest 2001

(VKs only)

Continent: Oceania

Australia

VK4EMM *#	Single-Op All	3180192
VK2APK	Single-Op All	2184630
VK4UW	Single-Op All	879795
VK5GN #	Single-Op All	538734
VK4TT	Single-Op All	509270
VK2PS	Single-Op All	255448
VK2QF	Single-Op All	211792
VK4BUI	Single-Op All	65462
VK3JS	Single-Op All	47460
VK3IO	Single-Op All	13489
VK3TZ *^	Single-Op 80M	1080
VK2AYD *^	Single-Op 20M	217994
VK3AMD	Checklog	50

Continent: OCEANIA

Australia

VK5GN *^#	Single-Op All	2874143
VK2CZ	Single-Op All	1440504
VK2APG	Single-Op All	1109801
VK2FHN	Single-Op All	987012
VK3TZ	Single-Op All	938202
VK4EMM	Single-Op All	709956
VK1JDX	Single-Op All	368220
VK1MJ	Single-Op All	253580
VK3IO	Single-Op All	215644
VK4BAY	Single-Op All	28792
VK7JAB #	Single-Op All	348
VK7LUV	Single-Op All	126
VK2APK *^	Single-Op 20M	252215
VK3YE	Single-Op 20M	7242
VK2VZQ *^	Single-Op 15M	167692
VK4DMP	Single-Op 15M	141040
VK2XZ *^	Single-Op 10M	1847100
VK4NEF	Single-Op 10M	290088
VK4EJ	Single-Op 10M	35757
VK4WIL * (VK4SN VK4CEJ)	Multi-One	568980
VK3AMD	Checklog	39
VK3VP	Checklog	0

Good to see our usual "big guns" continuing their successes, but not forgetting those others in the list with very creditable scores. (Oh, and don't overlook the Wooden Spooner above! Trouble in the log checking program.)

On behalf of the organising committee, thank you to everyone. Hope I worked you in this year's event.

Ian VK3VP

Rules Summer VHF-UHF Field Day 2003

from John Martin (VK3KWA), Contest Manager

The Summer VHF-UHF Field Day will take place on the weekend of January 11 and 12, 2003.

The rules are the same as for the Spring Field Day in November 2002. The only change from previous years is the trial run of a 6 hour multi-operator section. Hopefully this will allow more stations to go out in the field, and if it is successful it can become a permanent part of the Field Day. Please include any comments on this or any other aspect of the Field Day with your log.

Dates

Saturday and Sunday January 11 and 12, 2003.

Duration in all call areas other than VK6:

0100 UTC Saturday to 0100 UTC Sunday.

Duration in VK6 only:

0400 UTC Saturday to 0400 UTC Sunday.

Sections

A: Portable station, single operator, 24 hours.

B: Portable station, single operator, 6 hours.

C: Portable station, multiple operator, 24 hours.

D: Portable station, multiple operator, 6 hours.

E: Home station, 24 hours.

Single operator stations may enter both Section A and Section B. If the winner of Section A has also entered Section B, his log will be excluded from Section B. The same applies to the winner of Section C if the station has also entered Section D.

General Rules

A station is portable only if all of its equipment is transported to a place which is not the normal location of any amateur station. Operation may be from any location, or from more than one location. You may work stations within your own locator square. Repeater, satellite and crossband contacts are not permitted.

One callsign per station. If two operators set up a joint station with shared equipment, they may choose to enter Section A or B as separate stations under their own callsigns, or Section C or D under a single callsign. If they enter Section A or B, they may not claim contacts with each other. Stations with more than two operators must enter Section C or D. Operators of stations in Section C or D may not make any contest exchanges using callsigns other than the club or group callsign.

No contest operation is allowed below 50.150 MHz. Recognised DX calling frequencies must not be used for any contest activity. Suggested procedure is to call on .150 on each band, and QSY up if necessary.

Contest Exchange

RS (or RST) reports, a serial number, and your four digit Maidenhead locator.

Repeat Contacts

Stations may be worked again on each band after three hours. If the station is moved to a new location in a different locator square, repeat contacts may be made immediately. If the station moves back into the previous locator square, the three hour limit still applies to stations worked from that square.

Scoring

For each band, score 10 points for each locator square in which your station operates, plus 10 points for each locator square worked, plus 1 point per contact. Multiply the total by the band multiplier as follows:

6 m	2 m	70 cm	23 cm	Higher
x 1	x 3	x 5	x 8	x 10

Then total the scores for all bands.

Logs

Logs should cover the entire operating period and include the following for each contact: UTC time, frequency, station worked, serial numbers and locator numbers exchanged, points claimed.

Cover Sheet

The cover sheet should contain the names and callsigns of all operators; postal address; station location and Maidenhead locator; the section(s) entered; the scoring table; and a signed declaration that the contest manager's decision will be accepted as final.

Please use the following format for your scoring table. In this example the operator has operated from one locator and worked four locators on each band:

Band	Locators Activated (10 pts each)	+	Locators Worked (10 pts each)	+	QSOs (1 pt each)	x	Multiplier	=	Band Total
6 m	10	+	40	+	40	x	1	=	90
2 m	10	+	40	+	30	x	3	=	240
70 cm	10	+	40	+	20	x	5	=	350
					Overall Total			=	680

A sample cover sheet has been posted on the VK-VHF e-mail reflector, and copies can also be obtained from the e-mail address given below.

Entries

Paper logs may be posted to the Manager, VHF-UHF Field Day, 3 Vernal Avenue, Mitcham, Vic 3132. Electronic logs can be e-mailed to jmartin@xcel.net.au. The following log formats are acceptable: ASCII text, MS Office RTF, DOC, XLS or MDB. If you use Office 2000, please save the files in Office 97 format.

Logs must be received by Monday, February 3, 2003. Early logs would be appreciated.

ALARA Contest Results 2002

It was a disappointing year this time, with fewer participants from VK, though our DX members kept up their usual effort. The conditions were quite reasonable both evenings, and some members managed contacts during the daylight hours as well.

I heard quite a few giving numbers, BUT NO LOGS came in from many of them!

We did have a bit of confusion regarding the email address this year, but there were 6 logs that arrived by that means. That should all be behind us in the future, as ALARA now has its own e-mail address for the Contest.

Everybody should be able to use this one: alaracontest@wia.org.au

Our thanks to WIA for this service.

Again this year two members put in a wonderful effort to take out the top honours – namely Gwen VK3DYL and Bev ZL1OS. It's probably time for others to give these two girls a challenge! Susan VK7LUV was our top Novice, while Pat VK3OZ again earned the Florence McKenzie trophy for CW. Again Mavis VK3KS made the effort to give contacts on CW – thank you very much, Mavis. As this was the third time Pat had won the trophy, we anticipated the results and presented her with the actual trophy at the recent ALARAmeet in Murray Bridge. Our top OM this year was Chris VK2LCD, and it was great to hear him giving the girls the numbers – keep up the good work, Chris!

The change of date has been definitely for the better, so we will be keeping to that schedule – next year's Contest will be held on August 30th/31st, 2003 over the same time period.

I will look forward to working many more of you next year – I hope!!

33, Marilyn VK3DMS, Contest Manager

22ND ALARA CONTEST RESULTS

24/25th August, 2002

Gwen VK3DYL	758	Top score overall, Top score VK YL, Top phone score, Top VK3 ALARA member
Susan VK7LUV	256	Top VK Novice, Top VK7 ALARA member
Bev ZL1OS	215	Top DX YL, Top ZL ALARA member
Chris VK2LCD	206	Top VK OM
Marilyn VK3DMS	182	CHECK LOG
Celia ZL1ALK	163	
Christine VK5CTY	152	Top VK5 ALARA member
Robyn VK3WX	140	
Steve VK5AIM	138	
Dot VK2DB	131	Top VK2 ALARA member
Alan VK7JAB	127	
Bron VK3DYF	122	
Lynnette ZL1LL	108	
Elizabeth VE7YL	97	Top VE ALARA member
Justin VK7TW	68	
Pat VK3OZ	62	Top VK YL CW Florence McKenzie Trophy
Rosemary ZL1RO	57	
Margaret VK4AOE	55	Top VK4 ALARA member
Elizabeth VE7TLK	25	
Mavis VK3KS	20	
Evelyne F5RPB	16	Top European ALARA member

SUMMARY:

VK ALARA members	10 (Includes 1 check log)
DX ALARA members	7
VK OMs	4
Total logs	21

2003 Hunting Lions In The Air Contest

The 32st annual Hunting Lions in the Air contest will take place on the weekend January 11 – 12 2003.

Objective: "To create and foster a spirit of international understanding and cooperation" among radio amateurs and Lions through world-wide radio communication. The contest is to commemorate the birthday of the founder of Lionism, Melvin Jones, born at Ft. Thomas, Arizona USA on January 13, 1879.

Websites:
http://www.sarl.org.za/public/contests/lionita.htm
and
http://www.geocities.com/lions410b/

Operators interested in additional information regarding this contest should write to the Contest Committee at:

The HLITA Contest Committee
Lions Club of Midrand
PO Box 1548
Halfway House 1685 South Africa
or via email to:
rad.handfield-jones@pixie.co.za

Remembrance Day Contest 2002 — VK6 Division Wins!

From 6th place last year to 1st place in 2002, the VK6 Division has pulled out all stops to bring the trophy home to the West.

As a member of the VK6 Division, I can say that there was tremendous enthusiasm and a strong desire to put in a winning effort this year. Congratulations to all who participated and made the win possible.

Winning the RD Contest is all about participation. VK6 had the highest number of submitted logs of all the divisions this year. It seems proper that effort should be rewarded.

Once again, the task of checking logs and collating results was made very easy by the high standards of submitted logs. I believe that this is due to the good understanding of the rules and the increased use of computers for contest logging.

Here now are the results for the contest.

RESULTS

Divisional Scores

Table 1 shows the placing of each division along with their overall Improvement Factors.

Table 1: Divisional Ladder

1st	VK6	1.136
2nd	VK4	0.993
3rd	VK7	0.920
4th	VK5/8	0.822
5th	VK2	0.585
6th	VK3	0.532
7th	VK1	0.462

The total scores in both HF and VHF are shown in Table 2.

Table 2: Divisional Scores

Div'n	HF	VHF
VK1	270	118
VK2	2643	84
VK3	2601	2218
VK4	2903	1490
VK5/8	3204	1367
VK6	2437	5060
VK7	1274	986

For those who wish to know how the final score for each division is calculated, I have included the following live example of how it is done. I will use the VK3 Division's figures in the calculations.

First is the calculation of Benchmarks for VK3 for 2001 RD Contest.

2001 Benchmarks. (As published in 2000 results and 2001 rules)

HF 3852
VHF 8727

2001 Scores. (As published in 2001 results)

HF 2286
VHF 2174

Formula:

2002 Benchmark = (0.25 x 2001 Score) + (0.75 x 2001 Benchmark)

Calculations:

HF

2002 Benchmark = (0.25 x 2286) + (0.75 x 3852)
2002 Benchmark = 571.5 + 2889
2002 Benchmark = 3461

VHF

2002 Benchmark = (0.25 x 2174) + (0.75 x 8727)
2002 Benchmark = 543.5 + 6545.25
2002 Benchmark = 7089

Those 2 benchmark figures are the scores the division needs to beat to register a positive improvement factor in each section of the contest.

Now to calculate the final score, let's use the points that the VK3 division scored in HF and VHF this year.

Formula:

Improvement Factor = 2002 Points divided by 2002 Benchmark

Calculations:

HF
2601 / 3461 = 0.752

VHF

2218 / 7089 = 0.313

The two improvement factors are now averaged to give the division's final result.

Formula:

Overall Score = (HF Improvement + VHF Improvement) / 2

Calculation:

Overall Score = (0.752 + 0.313) / 2
Overall Score = 1.065 / 2
Overall Score = 0.533

Here now, are the Benchmark figures for the year 2003. This table will also appear in the rules for 2003. As above, the formula for determining these values is:

2003 Benchmark = (0.25 x 2002 Score) + (0.75 x 2002 Benchmark)

Table 3: 2003 Benchmarks

Div'n	HF	VHF
VK1	615	189
VK2	3950	132
VK3	3246	5871
VK4	3509	1302
VK5/8	3572	1662
VK6	2390	4315
VK7	1565	935

The following table shows the total number of logs received over the last 3 years. * Denotes winning division.

Table 4: Logs

Div'n	2000	2001	2002
VK1	9	15	8
VK2	41	41*	25
VK3	137	57	57
VK4	78*	40	53
VK5/8	46	51	54
VK6	59	47	72*
VK7	41	24	27
Total	411	275	296

Individual Scores

The individual scores for entrants are listed below. Certificate winners are denoted by an asterisk (*) and the top Australian scores in each section by a hash (#). Multi operator certificate winners are denoted by (M). Certificates will be issued to the top operators in each division. Where a multi operator station holds the top score, a certificate will also be issued to the top scoring single operator in that section. Where a single operator station holds top place, only that station will receive a certificate.

VK1

HF Phone

ZX	102*
DW	41
EY	33

HF CW

LK	62*

HF Open

AI	32*

VHF Phone

ZX	55*
EY	32
DW	31

VK2

HF Phone

XT	227*
BDT	117
LCD	81
ASU	56
EDB	33
IRP	30
YW	27
BJK	20
IGS	20
RL	10

HF CW

OI	170*
BHO	160
EL	132
PS	114
GR	88
KM	68
PH	44
RJ	40

HF Open

AYD	458*
BO	370
YN	198
DPD	144
EAH	36

VHF Phone

LCD	41*
BDT	40
JHN	3

VK3

HF Phone

SY	249*
AHY	183
KTO	157
BGH	108
ADW	91
ACR	85
JK	85
GH	82
BCZ	76
EK	73
BJA	70
DBQ	60
AMW	53
FH	50
AQ	41
US	41
JSS	40
DCP	34
ABP	33
DY	30
XH	30
SS	28
BSR	27
VQ	27
DET	23
RS	23
AKT/4	18
ATN	17
NA	13
AAJ	12

HF CW

AMD	42*
KS	40

HF Open

JS	294*
BML	227
VB	100
YE	39

VHF Phone

JK	278*
BJA	209
KBD	197
HAY	164
ACR	146
DBQ	123
GH	110
AQ	100
KTO	100
US	100
ZUG	100
XJU	74
EX	51
DYL	39
AUI	36
TTX	34
XP	30
TFE	15

VHF Open

JS	137*#
YE	106
VP	69

VK4

HF Phone

DO	369*
BAY	246
FNQ	225
FJ	180
KKN	142
WIT	134
BTW	90
ZA	82
ZJ	67
TE	64
PF	61
MC	44
KJD	41
PJ	40
ARS	32
ILD	30
EV	27
BSH	25
DV	25
ESK	21
FXL	21
WIF	21
LO	20
PAL	10

HF CW

BUI	190*#
COZ	92
LP	20

HF Open

LT	277*
GZ	200
TJ	58
ZZ	49

VHF Phone

AML	265*
AA	184
3CE/4	147
NBP	127
ZBV	117
EV	76
ZA	66
PAL	64
PJ	59
4LO	47
ZZ	42
ZM	39
WIT	38
ZT	36
JUS	35
DO	30
FNQ	28
BAY	25
DFZ	25
WJ	22
ZJ	14
WIF	4

VK5/8

HF Phone

CRS	501*#M
BP	263*
BWH	225
ATU	214
YX	150
XY	112
SIG	84
KMC	81
FD	80
NN	69
TW	55
AFZ	50
BCZ	46
AJW	45
RV	42
PC	34
OQ	28
ZQ	28
LL	24
KDK	23
8AA/3	17
SE	15
NF	13
RK	11
QV	10
VH	9
AIM	8
GRC	8
LZ	4
8AA/2	2

HF CW

8HA	114*
BGL	92
UM	8

HF Open

BRC	521*#M
WO	88*
UE	68
RG	62

VHF Phone

ZSR	272*
BRC	237
XY	120
HKT	116
MX	101
ZKK	86
GRC	84
AIM	56
KMC	56
PC	55
RV	38
SE	38
AVQ	27
LZ	26
QP	19
ADE	18
YX	18

VK6

HF Phone

SZ	476*M
CSW	172*
ADI	128
GW	111
JP	110
BRN	88
AB	71
SAR	70
TS	41
PX	35
AR	30
ED	18
KH	14
HK	13
KG	11
APK	10
NU	8
KAD	2
SAA	2
SH	2

HF CW

AFW	182*
AJ	100
AF	62
WT	34
PM	28

HF Open

VZ	278*
TQ	232
NGW	88
RZ	21

VHF Phone

ANC	401*#M
JIP	401*#
ZBP	401*#
NGW	307
HGR	306
RRG	199
BDO	197
CSW	193
SAR	186
APK	185
ZKO	163
AD	154
JP	139
MIN	127
AR	123
YF	121
KAD	94
SAA	94
SH	94
NU	89
SWA	87
TRA	85
EH	82
XC	70
ZIC	66
TS	60
FJA	52
KG	51
WT	50
SJJ	49
RO	49
ARO	48
CRO	48
SIX	48
AF	39
KTN	38
XV	33
MM	28
KCC	27
RZ	21
HTW	20
HK	18
AB	17

VK7

HF Phone

VH	296*
CK	251
RN	204
TW	203
KC	70
HK	43
KH	35
NDO	35
PP	33
JGD	31
RM	30
KBE	20
BM	13
NGC	10

VHF Phone

ZIF	259*
KRW	114
HTW	102
TW	101
JGD	95
RM	88
VH	54
NDO	51
FB	50
EB	26
JK	25
PP	19
HGO	2

Overseas Section

HF Phone

P29KFS	154*
ZL3DW	76
ZL2ADN	64

HF CW

ZL4GU	48*

HF Open

ZL2ALJ	259*

It has been pleasing to see a small increase in overall activity in the contest this year. Some of us have been participants for many years and even decades. Many of the old timers are still participating and putting in good scores. The reason is very simple. The RD is "The Friendly Contest" and that is what keeps people coming back each year. The spirit of the RD is mateship and it is as strong as ever.

I'll close this year with a note from Al Carter, VK4LT. Al scored 277 points in the HF Open section for the VK4 Division. He has also earned a certificate for his efforts.

"Being in my 86th year, I reckon this is my final effort but have always had fun in this contest since its inception. Pity I had visitors for the last 6 hours of contest. 73, Al."

Thanks Al, thanks everyone.

73, Alek. VK6APK

ar

Low Level Entrance Licence

Brenda Edmonds VK3KT

I have been asked to make a few comments about the proposal for a low-level entry licence.

If the mandatory Morse code competence requirement is revoked at next year's WRC, we will, in effect, be left with only two levels of licence, the Unrestricted and the Novice. That would seem to be an appropriate time to introduce another level, lower than the current Novice, as a way of operating legally whilst learning. The UK has successfully added this level, as have several other countries.

Details of bands, power, and Licence conditions remain to be negotiated, but if we have in principle support for the proposal we can start the planning.

First, if we are to have a three level system, let us invent some new names for them, even if we have to call them Levels 1, 2 and 3. Please note I am not advocating a decrease in the standard of the current licences, but a system, which allows some hands -on activity at an earlier stage.

The benefits of a lower entry seem to me to be the chance to build on the short interest span of the current young people who are conditioned against making a long-term commitment to study. If they can actually get on air after a few hours of work, preferably under some level of guidance from an experienced operator, we have a chance to nurture them along to higher achievements. Those of us who have been involved in running classes all agree that most of the dropping out occurs in the first six weeks or so of the classes, - the time when all the boring basic stuff is being covered. (I started one of my classes at the height of the CB boom on the Antennas section. Great idea.)

Another factor, which has influenced me to support this proposal, is the number of amateurs who have told me " If there were a lower level entry, my wife (daughter, son) would have a go." I have long advocated a recruitment plan aimed at the female half of the population, and this may be the way to advance this idea. I recently reread an article I wrote in the early 90s noting the benefits gained by a multi-licensed household. Whilst communication technology has overtaken us and almost everyone now has a mobile phone, there is still a place for radio, - and there are still some areas where mobile phones do not work. For short distances 2 metre or 70 cm simplex is ideal, -"I'm at the station, come and get me" or "I'm coming up the hill, where do I park?" are some of the frequently used phrases in our family. I have resisted pressure to get myself a mobile phone on the basis that I have a radio in the car and so have access to help in times of need. It has saved me considerable inconvenience on several occasions. It is also useful (and fun) when travelling with two or more cars in convoy. On the basis of our family experience, I would advocate the new licensees have access to either 2 metres or 70 cm as well as some HF.

How do you feel about this idea? Let your Divisional Council know your views on the proposal, on the level of examination required, the mentoring required and the privileges to be offered.

The ACA has said that a number of the regulations and conditions may need to be changed after WRC 2003, and they prefer to have one major revision rather than do a patchwork of changes. So we should have this proposal ready for submission fairly soon. Think about it.

ar

Book review

by Peter Parker VK3YE

The Dick Smith Way by Ike Bain

Written by a radio amateur (VK2AIG) and former general manager of Dick Smith Electronics, *The Dick Smith Way* is a mix of corporate history, anecdotes and ideas for business success.

The chapters covering the growth of Dick Smith Electronics, from its beginnings as a car radio shop, will be of most interest to *Amateur Radio* readers. Most entertaining is the account of a horror week of radio installations, which probably convinced him that electronics retailing was less risky than installations, particularly with inexperienced employees. The car radio shop was sold, the electronics store was upgraded and the company grew. As they say, the rest is history!

Other chapters discuss the establishment of Australian Geographic, the man himself and why he has been successful. Part Two provides observations on business management, including sales and marketing, publicity, honesty, managing people, negotiating, communicating and more, as learned by the author from Dick Smith. It is not all serious, though, with many amusing photos, cartoons and early advertisements (mainly from magazines and catalogues) spread throughout the book.

The Dick Smith Way is highly recommended to anyone who is curious about what makes the man tick, wishes to pick up some business hints from an Australian success or just wants a good read. It is published by McGraw-Hill Australia and costs $24.95.

ar

How's DX?

Ross Christie, VK3WAC
19 Browns Road, Montrose 3765, Vic.
Email Vk3wac@aol.com

Where did the Resolutions go?

Well, another year almost gone and as the famous Beatles song asks 'What have we done?' For once I can say that I stuck to most (though not all) of my 2002 New Years resolutions.

I did manage to do some serious homebrewing and did manage to rebuild my TL922 linear amplifier, but I have not yet put it into proper service. The 240V mains supply into the shack needs to be beefed up and upgraded before it can be operated safely (without causing 'key clicks' in the shack lighting, hi!). My promise to the XYL to go through my extensive junk box (well at least one of them) and throw some of it out has finally come to pass this last couple of weeks. Mind you, not much ended up being consigned to the garbage truck, its amazing what you forget you have secreted away. I did spend a considerable time on a homebrew project. My TL922 will need an ATU to match it to my various antennas. My junk box did not contain any suitable high-voltage variable capacitors so I had to manufacture them using 1mm thick aluminium sheet for the rotors and stators, 6mm thick Perspex for the ends and inch brass rod for the control shaft. After much cutting, filing and tapping the finished capacitors look quite good and are very smooth in operation, providing a 25 – 360pf swing with a DC breakdown voltage of 3.5kV. The inductor is wound on a perplex tube10 inches long (250mm) and 3 inches (75mm) in diameter using 4mm diameter enameled copper wire and nicely tapped with a large HV ceramic switch. But! Fulfilling all these New Year resolutions has limited the amount of actual time spent in the shack operating, and this brings me to my 2003 New Year resolution. Yes, this year I will spend more time in the shack actually operating my rig, TL922 and ATU and working even more interesting and exotic DX!

So, I'll take this opportunity to encourage you to make an effort to get on the air and do some operating in the New Year. Whether it is chatting on the local repeater, beaconing on APRS from around state or country, participating in a contest/s, working DX on SSB, Dxpeditioning, sending pictures around the globe on SSTV, typing on a keyboard to a distant computer using PSK31 or simply bashing the key in a quick exchange of details around the world. No matter what your interest is in amateur radio, enjoy it and make use of it. May you, and your family, have a very Merry Christmas and a safe and Happy

The DX

6W, SENEGAL. Jean-Marc, F8IXZ is heading to the Djoudj National Park in Northern Senegal, near the border with Mauritania. He will be staying there from the 14th until the 22nd of December. Jean-Marc says he will be using the callsign 6W/F8IXZ if the authorities refuse his application for a normal 6W call. He is planning to be active on 40 – 10 metres including the WARC bands using mainly CW. His equipment comprises an FT847 and a G5RV antenna. If possible he may also be QRV as 6W1/F8IXZ from Dakar at the beginning and end of his visit. QSL via home call. [TNX F8IXZ and 425 DX News]

7Q, MALAWI. Joe, G3MRC is currently active as 7Q7BP and will be on air for the next six months or so. He has been heard, and spotted on DX clusters, recently on 20 and 10 metres using CW. He is most active on 14021 kHz after 0400Z and on 28025 kHz after 1830Z. QSL is via G3MRC, Brian J. Poole, 18 Grosvenor Avenue, Kidderminster, Worcs, DY10 1SS, England. [TNX G3MRC and OPDX]

8Q7, MALDIVES. Juergen, DL8LE is travelling to The Maldives (AS-013) for a well-earned holiday. He is planning to be active from the 17th of Nov until the 3rd of Dec on all bands 80 – 10 metres mainly CW but will try and get some SSB, RTTY and PSK31 activity going as well. QSL via home call either direct or via the bureau. [TNX DL8LE and 425 DX News]

8R, GUYANA. Lenny, K5OVC says that there is a new YL operator in Guyana. Her name is Bevon and her callsign is 8R1YL and she has lost no time in hitting the airwaves. Recently she has been on air operating under the tutelage of Desmond, 8R1AK on 24960 kHz at around 1915Z. There have been other YL operators QRV from Guyana in the past, Gaynell, 8R1/KD4GMV (April '97) and Iris, W6QL/8R1 (Dec '81) but Bevon is the very first YL national to be licensed. No QSL route was given but perhaps one will be established soon. [TNX K5OVC and The Daily DX]

9K, KUWAIT. Bob, 9K2ZZ, was active recently on 10m and 20m this past week. He favours 28004 kHz around 1300Z, 14003 kHz around 2145Z and 14200 kHz at around 0315Z. He took part in the recent CQWW DX SSB Contest as a Single Op/Single Band (10m) entry and clocked up a score of 3802 QSOs with 154 countries. QSL is via W8CNL, Ray McClure, 5 McKenzie Circle, North Augusta, S.C. 29841-4319. [TNX 9K2ZZ and OPDX]

9L, SIERRA LEONE. Andy Chadwick, G3AB (ex G4ZVJ) will be in Freetown, Sierra Leone from the 7th of Nov for at least a month. He is planning to be QRV as 9L1AB on all bands 160-6 metres using mainly CW. QSL is via G3AB, Andy Chadwick, 5 Thorpe Chase, Ripon, North Yorkshire HG4 1UA, England. Updates on his schedule will be posted on http://www.g3ab.net/9l1ab.htm [TNX G3AB and 425 DX News]

EL, LIBERIA. Antoine, F6FNU says that Mario (ex EY8TM) has moved to Monrovia, Liberia and will be based there for approximately 3 years. Mario has been issued with a licence and the callsign EL2TM, however he is still waiting on the arrival of his equipment. QSL is via F6FNU. [TNX F6FNU and 425 DX News]

FR, REUNION ISLAND. Fred, F5IRO has been transferred to Reunion Island

(AF-016) and will be there until at least Jan 2003. He has been issued the call FR5KH/J, and expects to be able to get in a visit to Juan de Nova (AF-012) from time to time. QSL via F6FNU. [TNX F5IRO, La Gazette du DX and 425 DX News]

FT, AMSTERDAM ISLAND. Caroline, F4DOT is now active as FT1ZK from Amsterdam Island. She only has permission to operate on 6 metres but is on air everyday on 50110 kHz. She will try and organise for a beacon to be set up on 50086 kHz. QSL via F5JCB. [TNX OZ6OM and 425 DX News]

GM, SCOTLAND. Richard, G0OGN is moving to Barra Island in the Outer Hebrides (EU-010) for around a year or so. He is very keen on QRP operation and will be haunting all the usual QRP frequencies. Richard has been issued with the call MM3BRR and will be using this on air for the duration of his stay. [TNX GM3VLB and 425 DX News]

P40, ARUBA. Ken, K6TA, will be operating from here as P40TA in the ARRL 160m Contest (Dec 6th – 8th). Kay, K6KO will be joining him for a combined effort in the ARRL 10m Contest (Dec 14th / 15th) signing as P40K. Ken will be on the island from the 3rd until the 17th of Dec. QSL route for both operations is via WM6A. [TNX K6TA and OPDX]

S2, BANGLADESH. JF1EQA, Koichiro Takeda is currently working in Dhaka, Bangladesh and has recently been issued with the call S21YY. He has been heard on air recently on 15m using CW and RTTY. QSL via JF1EQA. [TNX JF1EQA and The Daily DX]

S2, BANGLADESH. KX7YT, John will be active as S21YV on 10, 15 and 20 metres using SSB and PSK31 from Dhaka, Bangladesh from the 8th of Nov until the 4th of Dec. His equipment will consist of an IC-706 and an AT-180 tuner to vertical and wire yagi antennas. John says he will be returning to Dhaka in February 2003 and again in October. QSL to his home call KX7YT, via the buro or direct. [TNX KX7YT and The Daily DX]

ST, SUDAN. William (ZS5WC, ST0F) is currently in Sudan and will be there until at least Christmas. He has a web site is at http://www.qsl.net/st0f/ where you can check his details etc. QSL via ZS4TX. [TNX The Daily DX]

TJ, CAMEROON. Rumour has it that Christian (ex-TT8DX) will be travelling to Cameroon in mid November and will be there until the end of the year. No other details re callsigns, bands or modes were mentioned, but keep an ear open on the bands and check propagation to this part of the world and you may get lucky. QSL via F5OGL. [TNX OPDX]

TN, CONGO. Paul, ON7UR arrived in late October and will be here for an unknown length of time. He has applied for a licence and call but none has been issued as yet. QSL via ON4ACA. [TNX OPDX]

TT, CHAD. Pascal, F5PTM, is currently in the city of Djamena and operating as TT8ZZ, possibly until December. Activity will be on all bands 80 - 10 metres using SSB and CW. He has recently been pretty active on 15, 12 and 10 metres using CW, usually between 1200-1700Z. Watch around 21016, 24910 and 28024 kHz. QSL is via F5PTM. [TNX F5PTM and OPDX]

V3, BELIZE. Joe Pontek, K8JP is returning to Belize and expects to arrive back around mid to late November and will stay until April 2003. He has been issued the call V31JP and will be QRV on 160 – 6 metres using mainly CW, with some SSB and possibly some RTTY too. QSL direct to KA9WON. [TNX K8JP and 425 DX News]

V73, MARSHALL ISLANDS. Bruce, AC4G is planning a trip back to the Marshall Islands. Listen for him signing as V73CW beginning in early Dec. QSL via AC4G. [TNX AC4G and The Daily DX]

VP5, TURKS and CAICOS ISLANDS. VP5/W6XK and VP5/N6EE will be on from the VP5B contest station in the Turks & Caicos over the period of the 1st until the 7th of January 2003, including the ARRL RTTY Roundup, using the callsign VP5NN. For short periods before and after the RTTY contest the pair will be operating RTTY on all bands, and CW and SSB on the WARC and low bands. QSL via their home calls and QSL VP5NN via NN6NN. [TNX NN6NN and The Daily DX]

XT2, BURKINA FASO. Dani, EA4ATI is currently in Hounde where he expects to spend the next six months. He has been issued with a licence and the call XT2ATI and has been active on 20 and 10 metres. Keep an ear tuned to 14208 and 28495 after 2130Z or 1400Z. Dani has been using simple dipole antennas but has plans in hand to install a triband minibeam. QSL via EA4YK only. [TNX EA4YK and 425 DX News]

YJ, VANUATU. Masahiro, JH3IIU will be in Vanuatu until March or May 2003. He is operating as YJ8MN using CW on the 20, 15 and 10 metre bands. QSL to Mashiro Nada, PMB005, Port Vila, Republic of Vanuatu. Or to Mashiro Nada, 3-15-39 Nishishizu Sakura, Chiba, Japan 285-0845. [TNX JH3IIU and The Daily DX]

IOTA Activity

Hiro, JA6WFM/HR3, is planning to be active from **Cayo Cochino (NA-160).** He expects to be in Honduras until at least December. No details of bands, modes or times were mentioned. QSL is via JA6VU. [TNX JA6WFM and The daily DX]

Steve, G0UIH, who is the manager of the RSGB's IOTA website (rsgbiota.org) will be back in Australia operating as VK2IAY/p from the 22nd of Nov until the 15th of Dec. He plans to operate from the following IOTA locations; **OC-142 (Lady Elliot Island)** from the 2nd until the 5th of Dec, **OC-172 (Fitzroy Island)** from the 6th until the 9th of Dec, **OC-137 (North Stradbroke Island)** from the 11th until the 12th of Dec. Steve also hopes to have the chance to put in some time from **OC-171** for a couple of days but all depends on the final plans. He will be running 100 watts and dipoles for 20, 17 and 15 metres. Listen for him on or around 14260, 18145 and 21260 kHz SSB only. QSL is via G0UIH, either direct or through the RSGB bureau. Any queries to rsgbiota@aol.com [TNX G0UIH and 425 DX News]

A group of Argentinian operators from the Bahia Blanca DX Group will be active from **Gama Island (SA-022)** on the 6th until the 9th of December. Listen out for LW3DKC/D, LW4DRH/D, LW4DRV/D, LW8DMK/D, LW9EAG/D, LU4ETN/D, LU6EPR/D, LU6DRD/D, LU7DSY/D, LU8DWR/D, LU8EBK/D, LU8ECF/D, LU8EBJ/D, LU8EXN/D and LU9ESD/D on all bands. QSL via LY7DSY, Carlos Almiron, P.O.Box 709, 8000 Bahia Blanca, Argentina. [TNX LU8DWR and 425 DX News]

PY0, BRAZIL. Tony, PY8IT will be active as PY0FT from Fernando de Noronha (SA-003) on 8th until the 10th of December. He is planning to concentrate on the RTTY, PSK31 and SSTVmodes. QSL via JA1ELY. [TNX NG3K and 425 DX News]

Special Events

ZS, SOUTH AFRICA. A total eclipse of the sun will take place on the 4th of December. It will be visible, from the Northern and North Eastern regions of Limpopo Province, South Africa. The eclipse will begin at approximately 0500z and will end two and a half hours later, depending on the viewing location. To mark the event a group of operators from ZS5 and ZS6 will air the special event call ZS6SOL from the 30th of November until the 7th of December. We are all invited to share the experience with them on 40, 20 and 15 metres (try around 7075, 14200 and 21155 kHz) depending on band conditions. QSL is via ZS5WI either direct to P.O. Box 1064, Eshowe 3815, South Africa (enclosing a stamped, self addressed envelope with your card) or via the bureau. [TNX OPDX Bulletin]

8N, OGASAWARA. The special event station 8N1OGA continues to be very active on the bands, commemorating the 75th anniversary of the Japan Amateur Radio League (JARL). The station will be on air until the end of January 2003. Recent activity has taken place on 160, 80, 30 and 12 metres. All QSL cards will be dispatched via the bureau unless you QSL direct to JA1MRM. A log search feature and more details about the station, and JARL in general, can be found on the web site at http://www.fivenine.com/8n1oga/eng/

Round up

LX, LUXEMBOURG. This one will really count. Please 'MAKE A QSO!' An international group of amateurs will be operating as LX0LT from the 30th of Nov until the 8th of Dec. The special station LX0LT will be on the air to help in collecting donations for scientific research against genetic illnesses. The team has confirmed sponsors who will donate 4 US cents per QSO. Their goal is to reach 20,000 QSO's in one week. The station will be active 24 hours a day all that week using SSB, CW, RTTY and PSK. Robert, LX1RQ says "The hams around the world have only one thing to do..... contact LX0LT on all bands (WARC included). We hope that we will be able to reach our goal of 20.000 QSOs." QSL is to LX1RQ direct or via the LX Bureau. The group also has a web site at http://www.qsl.net/lx0lt [TNX LX1RQ and OPDX]

6F, MEXICO. The special event station 6F1LM will continue to be active on weekends only through until the end of the year. The station commemorates the 70th Anniversary of Federacion Mexicana de Radio Experimentadores (FMRE). Activity is on CW and the Digital Modes (RTTY, PSK31, MFSK). 6F1LM will be operated on various bands and modes by a number of different Mexican hams and radio clubs during the rest of the year. Have a listen particularly around 7003, 10107, 14085, 14012, 18071 and 21015 kHz. A special QSL card with this very rare prefix will be sent to each and every contact made in January 2003. If you want to send them your QSL card please do so VIA THE BUREAU ONLY. You don't need to send them your card to receive their QSL card, however they will appreciate it very much if you do send them one. BUT PLEASE QSL ONLY VIA BUREAU. Please DO NOT send SASE, IRCs or Green Stamps, simply send it via the bureau and save yourself some money.

ANTARCTIC QSLs: A nice Antarctic QSL Gallery can be found on the web site of the French bulletin "Les Nouvelles DX" at http://lesnouvellesdx.free.fr/ [TNX F5NOD]

4S7BRG, Mario is now moving permanently to Sri Lanka. His HB9BRM QSL route will no longer be valid. All QSLs should now go to via the 4S bureau or to his qrz.com address. [TNX 4S7BRG and The Daily DX]

ZS6DX, Rudi will be using the special callsign **ZS02AM to mark the "Africa Militair"** airshow and arms exhibit at Waterkloof Airbase in Pretoria, South Africa. The call is valid for 12 months so Rudi says he will try to use it again later in the year. A special QSL has been printed for the occasion. QSL via ZS6DX direct or via the bureau. [TNX ZS6DX and The Daily DX]

A news item from the ARRL reports "Top ARRL officials say they are still optimistic about a new ham band around 5 MHz. ARRL general counsel W3KD, Chris Imlay, says ARRL is working with the U.S. government to work out the impasse. Imlay has indicated something less than the originally requested 150 kHz and something less than the requested 1,500 watt power output limit might be what will 'fly,' in the end." The UK and the US have both issued 'special notices of variation' or official permission for limited use of a band of frequencies around 5 MHz. Is anyone (WIA or private individual) lobbying for access to this new band for VK amateurs?

A disconcerting report from The Daily DX magazine regarding a German team (using the callsign H8A) being requested to cease operations after only a short period of operation has emerged from Central America. Apparently "the group were intending to enter the CQ/RJ WW RTTY contest with the special call but the 'written and signed license' was cancelled a few hours before the contest when some Panamanian ham(s) complained to authorities about it. The group of German operators used the call HP1XVH instead and for the rest of their stay on Contadora Island. All QSL's should be to DL6MYL. Operators DJ7AA, Wil; HP1XVH, Gunter; DL5LYM, Tom and DL4LQM, Dimo plan to have a lot more to say about the callsign problem after the dust settles. This same sort of thing has happened in other Central American countries, resident hams objecting to operations by 'outsiders'. The last I heard, even Mexico had some restriction or outright prohibition on permission for non-Mexicans to operate in contests." If I remember correctly, last year a group of UK amateurs were similarly treated in Mexico. One wonders where the spirit of amateur radio has gone when this sort of thing happens. Surely we should all be trying to expand the number of reciprocal licence agreements between countries instead of limiting them!

A new website called **"THE DXER'S RANKERS"** has been commissioned by Mako, 7N2UTO. It is a special collection of websites that should prove useful to DXers as well as bulletin board service that will accept image files and "reverse link ranking' (perhaps someone can explain that one to me?) The website can be found at:
http://isweb31.infoseek.co.jp/sports/rankers/

Sources

Thanks to the following people and organisations for the information in DX Notes. 7N2UTO, DL4LQM, ZS6DX, 4S7BRG, F5NOD, 6F1LM, LX1RQ, JA1MRM, ZS5WI, PY8IT, LU8DWR, G0UIH, JA6WFM, EA4YK, NN6NN, AC4G, K8JP, F5PTM, F5OGL, ZS5WC, KX7YT, JF1EQA, K6TA, OZ6OM, F5IRO, F6FNU, G3AB, 9K2ZZ, K5OVC, DL8LE, G3MRC, F8IXZ, La Gazette du DX, 425 DX News, OPDX (BARF80), The Daily DX, RSGB and The ARRL.

ar

Henry VK8HA

International Amateur Radio Union. Region 3

Monitoring Systems News

This month also, we have innumerable reports on Indonesians, the data stations and the regular Havana gurgle from Cuba, CODAR sea state Radar, the several multi channel data stations, the usual fundamental and the several harmonics/spurious products from Radio Pyongyang are continuing unabated. Unless, all possible pressure is brought on the known intruders, the condition continues to remain bad and may tend to worsen if we fail to complain and follow-up with reminders.

This month's news carries the three monthly reports from JARL, which were long pending and the readers can assimilate the statistics from the JA area.

In the Newsletter of IARU Region 2, of October 2002, the Regional Monitoring systems Coordinator OM Martin Potter, VE3OAT, has brought out in the most clear and lucid style, the need for a Monitoring system in every National Society. I want to share it with all of you, as it is very *urgently required* in many of the National Societies of Region 3.

An active monitoring system - why?

Some National Amateur Radio societies have a corps of volunteer monitors who regularly monitor the Amateur bands, looking for intruders and other sources of interference. Some national societies have monitoring systems which are dormant, and which become active only when a serious problem is reported by other Amateurs or organizations. Some national societies have no monitoring system at all. Here are two advantages of an active monitoring system:

1. The monitors of an active monitoring system are experienced and are able to quickly determine the necessary technical information about new intruders, often comparing results by e-mail, and sometimes identifying the source of interference within a few hours of the first report.
2. Active monitors can develop expertise that will assist your national telecommunications administration in identifying sources of interference, thus becoming a credit to your national society

How does an active monitoring system do this?

Here are some of the ways:

1. The monitors of an active monitoring system regularly tune across the Amateur bands, looking for non-Amateur stations and becoming familiar with the different intruders found there, both digital and analog.
2. Active monitors become familiar with the problems of direction finding (DF) and can properly assess amateur direction finding results, noting the limitations due to propagation and equipment and extracting the best interpretation from ambiguous data.
3. Active monitors learn to measure radio frequencies accurately and precisely, often providing important information to assist in signal identification.

Does your national society have an active monitoring system?

News from other Regions:

Region 1:

Ron Roden, G4GKO, IARU Region 1 Monitoring System Coordinator comments in his October report as follows:

"Merlin Communications are an organization that have contract responsibility for the operation and maintenance of the BBC's World Service transmitters and it would be remiss of me if I did not record our thanks for their ready cooperation and assistance when a problem of harmful interference to the Amateur Service is brought to their attention.

"On two occasions in the past year a particular combination of transmitter/antenna at their transmitter site in Rampisham [southwestern England] was causing harmful interference across the 20 metre band and on both occasions immediately after being advised, a speedy change of transmitter was effected to clear the problem.

"Quite recently the Region 2 IARUMS Coordinator advised me that a transmitter located on Ascension Island and used by the BBC relay station beaming to Africa had harmonics appearing in the 20 metre exclusive amateur band in Region 2 [on 14320 kHz]. Once again Merlin were most helpful and I have been advised that the problem is presently under investigation and may be also the result of a particular combination of transmitter/antenna. Merlin expects the problem to be cleared very shortly."

Region 2:

The following intruders were notable in Region 2 during September:

7000 kHz J3E,U YL repeating in French "Test de Matis" with days of week and months of year.

14057.25 N0N (A3E) Carrier with 100 hertz (and harmonics) hum modulation.

14250 A3E Radio Pyongyang, DPR Korea, harmonic of 2850 kHz.

14320 A3E British Broadcasting Corp. (BBC) World Service, harmonic from 7160 kHz.

10, 12 m A3E, J3E Many "CB type" pirate radio operators.

Compiled by:
B.L.Manohar "Arasu"
Regional Monitoring Systems Coordinator

HF Predictions

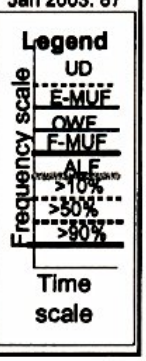
by Evan Jarman VK3ANI
34 Alandale Court Blackburn Vic 3130

These graphs show the predicted diurnal variation of key frequencies for the nominated circuits.
These frequencies as identified in the legend are:-

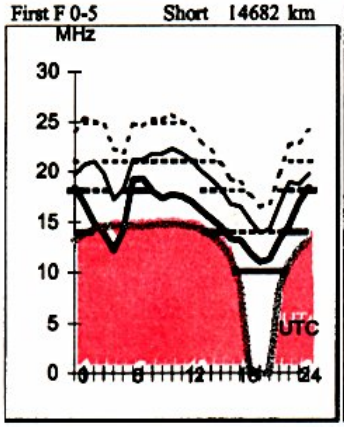
- Upper Decile (F-layer)
- F-layer Maximum Usable Frequency
- E-layer Maximum Usable Frequency
- Optimum Working Frequency (F-layer)
- Absorption Limiting Frequency (D region)

Shown hourly are the highest frequency amateur bands in ranges between these key frequencies, when usable. The path, propagation mode and Australian terminal bearing are also given for each circuit.
These predictions were made with the Ionospheric Prediction Service program: ASAPS Version 4

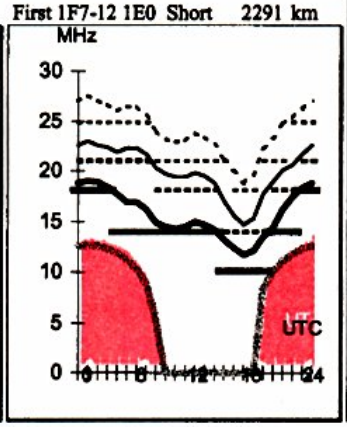
December 2002
T index: 89
Jan 2003: 87



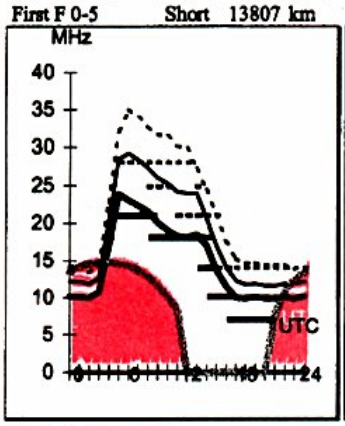
Adelaide-Accra 242
First F 0-5 Short 14682 km



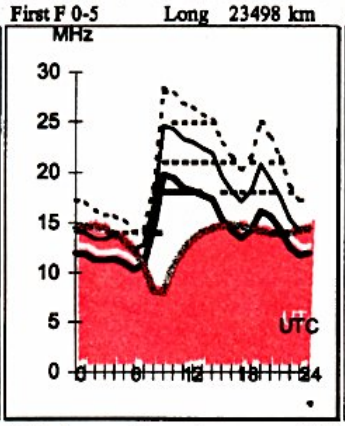
Brisbane-Auckland 123
First 1F7-12 1E0 Short 2291 km



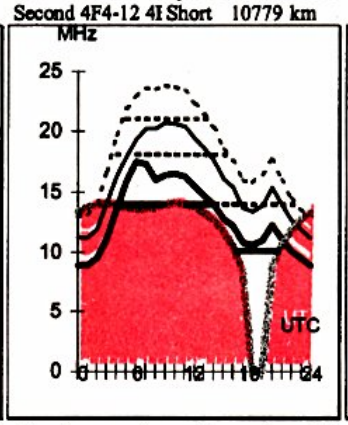
Adelaide-Moscow 318
First F 0-5 Short 13807 km



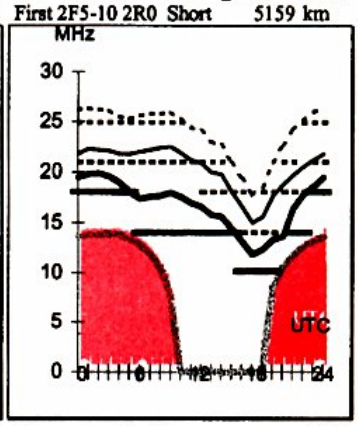
Brisbane-London 147
First F 0-5 Long 23498 km



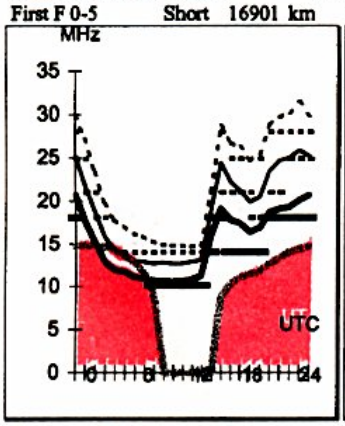
Canberra-Capetown 219
Second 4F4-12 4I Short 10779 km



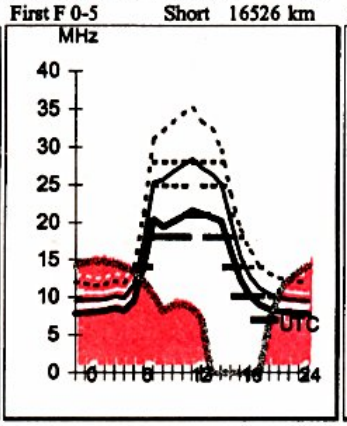
Darwin-Invercargil 144
First 2F5-10 2R0 Short 5159 km



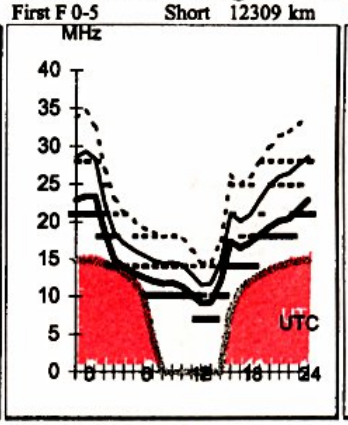
Adelaide-Ottawa 58
First F 0-5 Short 16901 km



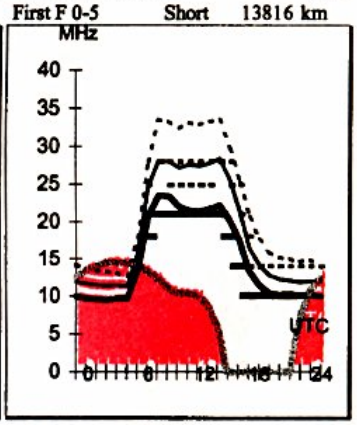
Brisbane-London 327
First F 0-5 Short 16526 km



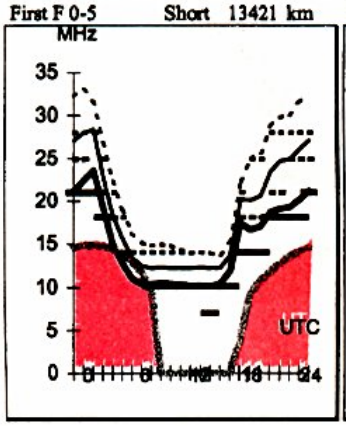
Canberra-Los Angele 62
First F 0-5 Short 12309 km



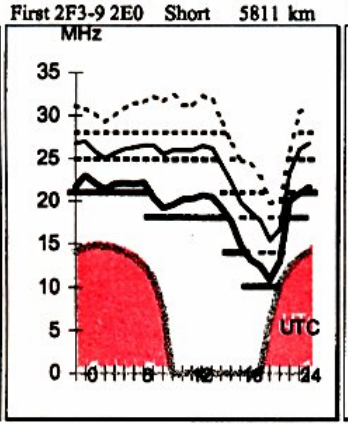
Darwin-Paris 322
First F 0-5 Short 13816 km



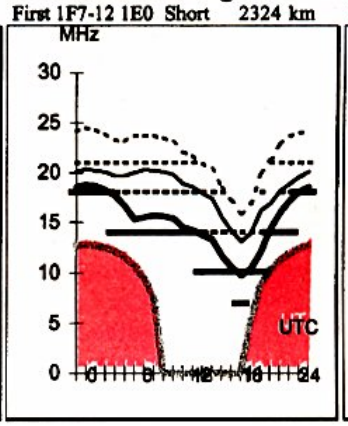
Adelaide-Vancouver 49
First F 0-5 Short 13421 km



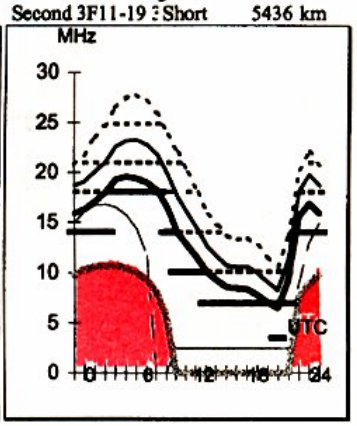
Brisbane-Manila 320
First 2F3-9 2E0 Short 5811 km



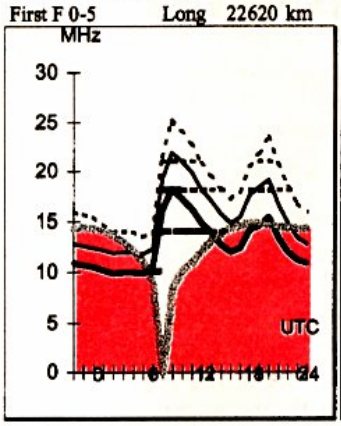
Canberra-Wellington 115
First 1F7-12 1E0 Short 2324 km



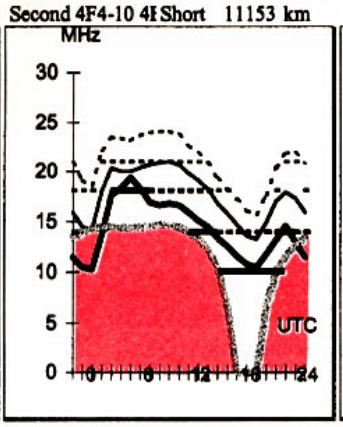
Darwin-Tokyo 10
Second 3F11-19 3 Short 5436 km



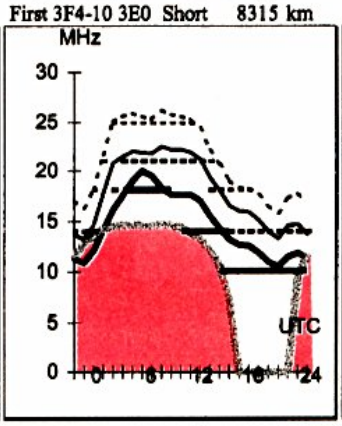
Hobart-London 123
First F 0-5 Long 22620 km



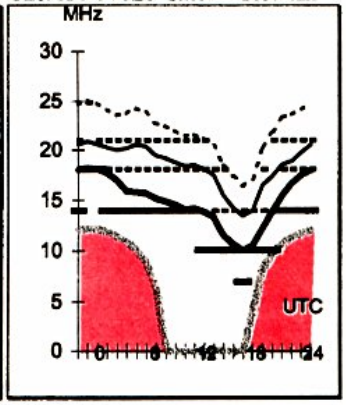
Melbourne-Lusaka 241
Second 4F4-10 4E Short 11153 km



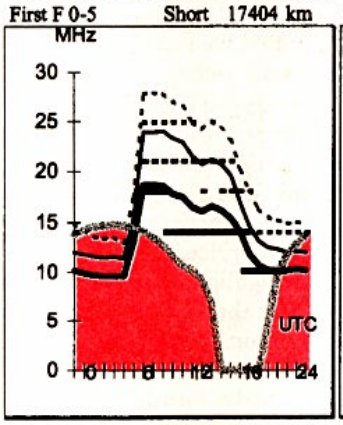
Perth-Johannesburg 248
First 3F4-10 3E0 Short 8315 km



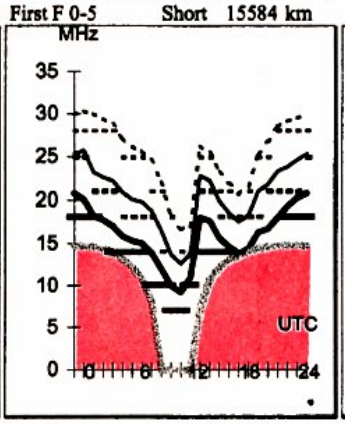
Sydney-Auckland 106
First 1F8-14 1E0 Short 2159 km



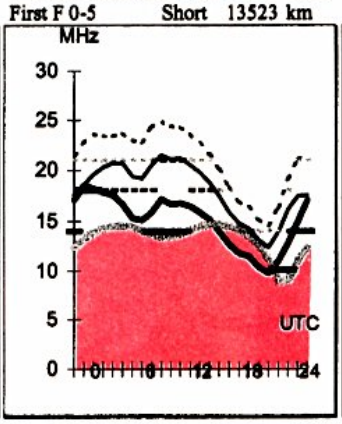
Hobart-London 303
First F 0-5 Short 17404 km



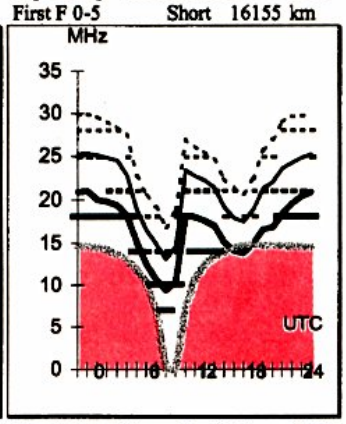
Melbourne-Miami 94
First F 0-5 Short 15584 km



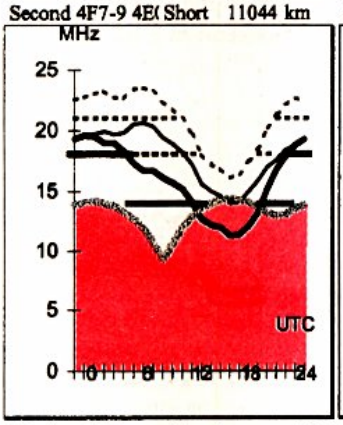
Perth-Rio de Janeiro 203
First F 0-5 Short 13523 km



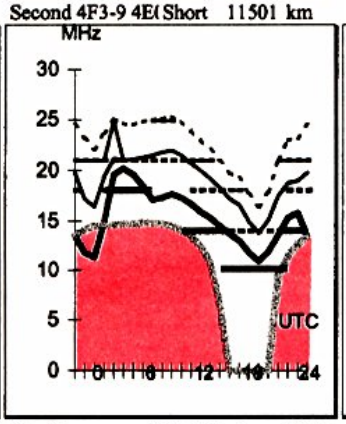
Sydney-Barbados 199
First F 0-5 Short 16155 km



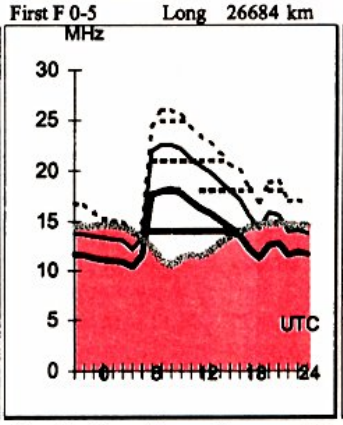
Hobart-Montevideo 161
Second 4F7-9 4E(Short 11044 km



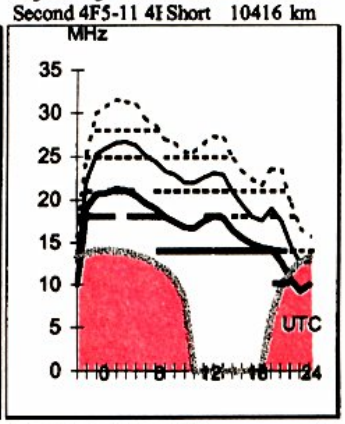
Melbourne-Nairobi 258
Second 4F3-9 4E(Short 11501 km



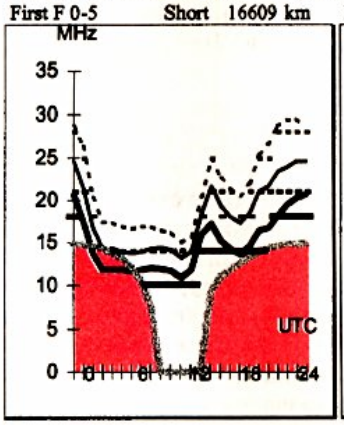
Perth-Rome 123
First F 0-5 Long 26684 km



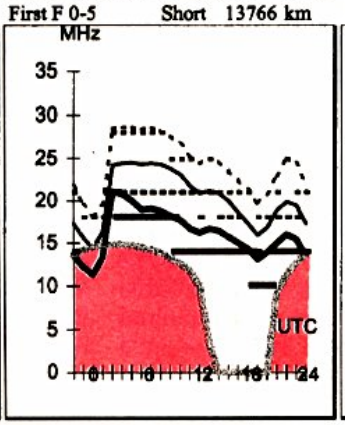
Sydney-New Delhi 302
Second 4F5-11 4E Short 10416 km



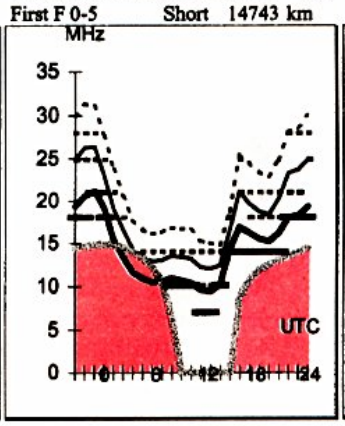
Hobart-New York 80
First F 0-5 Short 16609 km



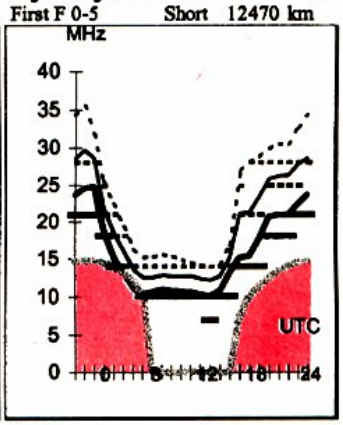
Melbourne-Tel Aviv 267
First F 0-5 Short 13766 km



Perth-San Francisco -66
First F 0-5 Short 14743 km



Sydney-Seattle 47
First F 0-5 Short 12470 km



VHF - UHF.. AN EXPANDING WORLD

David K Minchin VK5KK
Postal: 10 Harvey Cres, Salisbury Heights, SA, 5109
E-mail: tecknolt@ozemail.com.au
Web page: http://members.ozemail.com.au/~tecknolt
Phone: 0403 368 066 AH only
All times are in UTC.

The Future of 420 - 450 MHz

Andrew Davis VK1DA reports ... in the 1974 WIA Federal Convention the VK3 Division reported that discussions with the authorities of the day had indicated that there would be a difficulty with retaining amateur access to the 420/450 band in the long term.

The VK3 delegates strongly recommended that the WIA commence considering negotiating for a small segment of the band as an amateur exclusive allocation, in exchange for either continued secondary status or even lower status in the rest of the band, or even in exchange for giving up claims to much of the band.

There seems to still be a naive notion among some, that the bands in the post war Regulation handbook will stay that way forever.

It is up to those interested in this band to state their concerns and be realistic about their demands. The others who don't care won't even notice it getting wiped off the list.

So what is the basic minimum band requirement? In terms of preferred sole use, shared use and occasional use.

I suggest the following ideas merit discussion. (Note: I'm not saying the following is the final word, I'm inviting and encouraging considered thought).

1. We should decide on a band segment that meets most needs, allowing amateurs to retain international compatibility for moon bounce and satellite segment compatibility. I suggest 430 to 440 would be a pretty good segment to go for as a starting point.
2. If the "Low power interference devices" and baby hand held radios are going to remain at 433, which seems inevitable, the repeater inputs have to move.
3. Forget TV in this band.
4. There are many more repeater users than DX operators and perhaps this is when we start valuing each other's usage and numbers.
5. The WIA is the logical body to coordinate a campaign and a submission to the ACA. Whatever our individual misgivings about the past, united we stand, divided we lose our privileges.

This paper has just been placed on the ACA website regarding 420-430 MHz: http://www.aca.gov.au/licence/accredit/420-430bands.htm Note the comment though re need for more than the 10 MHz for emergency services.

It has been highlighted in this column previously (for the last 28 years!) that we need to seriously plan our fall back position on the 420 – 450 MHz (lets call it the 432 MHz band). Andrew's comments are a sound position to start from. Whatever is planned should treat all users of this band in a fair manner.

50 MHz

Bruce VK2EM reports ... we had a reasonable opening into Hawaii yesterday (Friday 22-11-02) on 6 metres. I worked NH6YK for 53 x2, KH6SX for 52 x2 both in BK29. I also heard NH7RO at 57 but he couldn't verify my signal due to bad QRN at his end. I also heard Brian VK2UBF in Bulli and Wayne VK2TQP near Coff's Harbour working a few so the opening covered quite a bit of the NSW coast ... Bruce VK2EM

Bevan VK4CXQ reports ... Activity report from Townsville mid Oct to mid November on 6 metres. From 15 Oct to 26th most activity was from Japan with the occasional signal from China. On 27th EU opened a little with 9A, LZ, YU, and IT as well as a few stations from Ukraine. It was a bit quiet until 2 Nov when ZK1, HW1 and 9N7 were worked. 7 Nov worked HV0A, and Bulgaria, Italy and Croatia. 8 Nov QSO with K8T, YA4, some more EU stations, A45 and EX8. 13 Nov EU opened a bit more with Ukraine, lots of DLs and SPs and some OKs, S5, ON, Italy and France. 51 QSO's in about 2 hours. Not as many QSO's as this time last year.

Have finally made the DX100 club on 6 (100 countries worked), now the hard work begins trying to get the QSL cards. Hope it doesn't take as long as the QSO's (2 years & 9 months) ... Bevan VK4CXQ

Congratulations Bevan on the 100 Countries on 50 MHz!!

144 MHz and above

Peter VK3YE has been touring VK6, he reports ... Equipment: FT-817 transceiver. Antenna: 2-el yagi for 2m (made from rabbits ears indoor TV antenna – pulls apart to form a dipole for train mobile work and as will be mentioned later is surprisingly good on 70cm). A rush job built on the day before departure. On 6m the antenna was a random wire tuned up on the 160m - 6m L-match (as previously described in AR magazine). Battery: 8xC NiCad (thus power out would be approx 3-4w and not the rig's full rated 5w). Here are a few highlights:

12/10/2002 Portable from Kellerberrin Hill (200km east of Perth, other side of Darling Scarp). 2m: Worked VK6HK, VK6ZWZ, VK6KZ and VK6TQ all in Perth. VK6KAT Donnybrook to the south heard bits of me (he was 43). Power 3-4w to a hand-held 2-el yagi (a small mast would have made a huge improvement).

Could hear VK6RPH beacon on 2m.

70cm: Didn't think we'd do any good here, as I had no antenna for 70cm. I removed the reflector, holding on to the dipole bit. It didn't retract small enough for 70cm so kept it as a 144MHz dipole (3/2 on 70cm). Put the dipole on the end of the squid pole giving a bit of extra height (about 3m above the ground - the constraint being the feedline length). Signals were weaker but worked VK6KZ & ZWZ on SSB and 6HK on CW.

A very successful experiment given the distance and the extremely poor antenna at this end. That was the only SSB/CW operating but did some more beacon listening later ... Peter VK3YE/6

Neil VK2EI reports on a recent tropo opening to New Zealand ... had a listen fairly late last evening (8/11/2002) and could hear some ZL beacons. Called CQ ZL but guess all good Kiwis were probably in bed!

8/1100Z ZL1VHW Hamilton 144.256 51, ZL1VHF Auckland 144.240 31, ZL2VHT New Plymouth 145.220 Nil (Later confirmed not operational), 1135Z ZL1VHW Hamilton 144.256 52, 1322Z ZL1VHW Hamilton 144.256 31, 1845Z ZL1VHW Hamilton 144.256 31

Worked: 2015Z ZL2WSP New Plymouth Stuart 52 53, 2113Z ZL2TAL New Plymouth Ray 41 41, 2335Z ZL1TPH/P Brynderwyn Steve 51 53/5, and 2335Z ZL1TPH/P Brynderwyn Steve 54 55

Steve asked me to advise he will be at the Brynderwyn site for the next 4 hours or so and also has 70cm and 23cm systems operational. He has also alerted other ZL's ... Neil VK2EI QF68km

Microwave News: 5.7 GHz ATV News

Barry, VK5BQ reports on microwave ATV activity ... You may be interested to know that I have been able to get a signal from Stansbury, across St Vincent's Gulf to Maitland, VK5AO, in Adelaide on 5.8 GHz.

The mind boggling thing is that Maitland has received my ATV signal on just a 5.8 GHz chaparral feed tied on to a pole 30 feet up his tower. There is no dish at this time. The received signal strength varies from nothing to P5. The main problem is that his converter and Sat. RX are also up the tower, the sun is belting the daylights out of the converters oscillator and causing frequency drift, or that's what we think.

Not bad for a distance of over 86 km being received on just a waveguide feed. For the sake of this historical event and I think it would be a first, the recorded time was 11.10 AM Tues, Nov 5, 2002 witnessed by the following personalities. VK5JD, VK5RO, VK5KGS and VK5ZDG. I tried with Don but his setup wasn't successful. The witnesses observed the event via relays on 2.4 GHz and 1250 MHz.

The final amplifier seems to be going ok with the power supplies and protection circuits, with about 4 watts output. I can now operate on three ATV bands simultaneously with separately controlled antennae (1250, 2400, and 5800) and also receive only on 10 GHz. ... Barry VK5BQ

Microwave News: 2.4 & 5.7 GHz Unlicensed Data Links

Is this pushing the limit of unlicensed activity on two of our "allocated" amateur bands? The following comes from the USA ... Hans Werner-Braun, a researcher at the San Diego Supercomputer Centre and principal investigator for the San Diego County High Performance Wireless Research and Education Network (HPWREN), plans and develops wireless circuits that routinely span miles, including HPWREN's current distance-record holder, a 72-mile (115km) hop installed last month from San Diego to San Clemente Island.

Although standard 802.11b WLAN gear operating in the unlicensed 2.4-GHz frequency serves as the baseline hardware for the new network, Werner-Braun said that HPWREN, backed by grants from the National Science Foundation, uses far-from-routine hardware configurations to serve rural San Diego County.

The link to San Clemente Island — used to carry data from a seismograph, data logger and Global Positioning System receiver — runs with the maximum 1-watt power output allowed by the Federal Communications Commission for 2.4-GHz equipment, Werner-Braun said. At both ends of the link, HPWREN technicians installed high-gain, 2-ft (600mm). Parabolic antennas to provide an additional boost to the signal.

Low costs, ease of installation and no hassles with protracted FCC licence proceedings are the hallmarks of HPWREN, which uses equipment operating in both the 2.4- and 5-GHz bands to provide broadband data service to scientific installations, schools and Indian reservations scattered throughout 10,000 square miles of rural San Diego and southern Riverside counties in California.

"There's no other viable choice" for high-speed access for scientific installations such as the Palomar Observatory besides HPWREN, which can easily, quickly and cheaply install wireless connections to backbone nodes on mountains such as Alliance Peak, Toro Peak and Monument Peak, he added.

The backbone nodes operate at a data rate of 45M bit/sec. in the same unlicensed 5-GHz frequency bands used by 802.11a WLAN equipment, with high-gain, 8-ft (2.4m). Antennas pushing the distance from feet to miles, Werner-Braun said.

Greg Ennis, technical director for the Wi-Fi Alliance, said that although wireless point-to-point bridging is "relatively routine," Braun's long shots are unusual. Whereas eight to 10 miles is common, Ennis said, a 72-mile (115km), 2.4-GHz link pushes the technology to its limits. .. from US Computerworld magazine, November 2002.

continued next page

Will's Page

Will McGhie VK6UU
21 Waterloo Cr Lesmurdie 6076
will2@iinet.net.au

Inverters Update

Last month's column chronicled the problems with using 12 volt to 240-volt inverters to power 240-volt fluorescent tubes. If more than two fluoros were placed across the inverter output the inverter failed and would not work again. The store where I purchased them was most helpful (Jaycar) and all up replaced 3 failed inverters, before it was agreed that the pure sine wave inverter would not run more than one 240-volt fluoro.

Contact with Jaycar's technical division agreed that there did indeed appear to be a problem and most likely it was the inability of the inverter to handle a capacitive load that the fluoro tubes introduced before they strike.

At this time there is no solution to the problem but it may be a warning will be included with this brand of inverters not to use them on fluorescent tubes that contain power factor correction capacitors. Just how you would know which fluoros do and don't contain capacitors without pulling them apart is impossible to know.

The modified sine wave inverter also had similar problems when powering fluorescent tubes but did not suffer catastrophic failure and would work again when turned off and on again. I have not contacted the store yet (Dick Smith) but will do so when I have time.

Time

While on the issue of time, and one of the reasons while the column is so short this month, is time wasted trying to figure out my internet connection. For the past week or so I have been suffering more than usual dropouts. Ringing the help desk always turns up yet another change to the settings and usually all works fairly well. However this time it was impossible to even connect to my ISP. Ringing the help desk resulted in the phone just ringing out. Luckily I have my original Pentium 100 still in operating order so I tried connecting to my ISP and it too would not go beyond the modem hand shaking. The conclusion was that the ISP had serious problems and the help desk had either been abandoned or was wilting under the load of calls. Sure enough several hours later all seemed to work, even though I was being kicked off after a short time.

Hopefully I will be able to connect long enough to email this to the editor.

VHF-UHF..An Expanding World **continued**

PLL locking of Microwave local oscillators

A few years ago I published & kitted a PLL to lock microwave oscillators against a known stable reference oscillator. My design was based on WA6CGR's design in the 1994 Microwave update. Nearly 100 KK048 kits have been circulated around the globe in the last few years but of late some of the IC's have become a bit hard to get. For those looking for a newer design to get better microwave oscillator stability then have a look at Luis' (CT1DMK) posting about the ref_lock: http://w3ref.cfn.ist.utl.pt/cupido/. This is the same info published in his 3/2002 Dubus article.

Basically, you need to convert your existing xtal LO into a VCXO by adding varactors in the same manner as the KK048. The CT1DMK board will let you lock several popular microwave LO freqs to a 10 MHz external reference.

One suitable reference would be the Z3801 GPS receiver for those who like to be within a few parts-per-billion accuracy. For more info on these GPS disciplined oscillators, look here...

http://www.realhamradio.com/GPS_Frequency_Standard.htm they probably won't maintain lock whilst moving, but they have "Smartclock" technology built in, which will probably track out your oven oscillator drift for most of a weekend.

With JT44 and a better stability oscillator, normal extended tropo propagation, we should be able to get another 10 dB performance over CW using a good pair of ears. JT 44 requires 600 Hz accuracy. Luis' chip includes many popular freqs already burned in, requiring a simple jumper wire installation. ... Bill W3IY

In closing

Christmas 2002 is upon us! Merry Christmas and Happy New Year to you all ... see you in the Summer Field day! I'll leave you with this thought... "No one can be completely relaxed ... like a wind up clock no person can function without some tension"

73s David VK5KK

ar

The RS 20 Power Supply

The following letter was received from the author Jim Tregellas VK5JST. The cautionary note was published with the original article to emphasise that the power supply was not a continuously rated one and if it was used at 20 amp continuously serious problems could arise. The magazine needed to make potential constructors aware of this. Hopefully with the information below readers can provide themselves with a very useful power supply for their SSB rig at a reasonable cost. The use with an SSB rig was specifically stated in the heading. There was no problem with the design of the circuit. In fact it is quite ingenious.

Editor VK5UE

Dear Colwyn,

Thank you for publishing my article on the RS20 power supply, but I have to say that I was both surprised and very annoyed to find the extraordinary caution attached to the end of it. In this caution, the reviewers seem to imply that the design is seriously lacking, and that fundamentally I don't know what I'm doing. Well, I can assure you that I do. The article says quite clearly and I quote "The heatsink size and power supply design have been optimised for SSB operation (regular peaks to 20 amps NOT the continuous drain of 20 amps) which happens in FM and AM operation". Your reviewers seem to have totally missed this point, and if they have, maybe some readers will too. So, to re-state it, THIS SUPPLY IS INTENDED TO POWER SSB TRANSCEIVERS WHICH DRAW 20 AMPS PEAK CURRENT. This description applies to many transceivers on the market, most of which put out around 100 watts PEP on SSB and 40-50 watts on AM and have AVERAGE current drains in the 8 to 10 amp region during transmit.

If a Cautionary Note was necessary (and it appears it was) then this is what it should have said loudly, instead of rabbiting on about wires with 7.5 amp ratings.

On this latter point, the reviewers got it exactly right. In fact, the supply has been carefully designed in line with standard commercial practice for articles which handle music or speech. If items such as mass marketed high fidelity amplifiers are carefully examined, the heatsinks and power transformers will be found to be rated at around 25 to 35 per cent of peak output. This practice is totally justified as typical music and speech both have very low average power levels with the occasional high peak (organ music and rap are possible exceptions). And if you look at commercially made 1500 watt SSB RF linears as used by many of the amateur fraternity overseas, you will be very lucky to find one with a mains transformer continuously rated at more than 600 watts. But if you want to make a supply which will supply 20 amps continuously for FM or AM, simply follow the instructions which were clearly given in the paragraph "ADDING MORE MUSCLE". Wind the secondary with wire having a cross sectional area of around 5 square millimetres, use some heavy stud mounted diodes on a good sized heat sink, and beef up the heatsink on which the power transistors are mounted (or simply increase the airflow over the existing sink which is very close to continuous requirements anyway).

Coming now to some of the other points your reviewers raise, one of which is rectifier peak current limiting. First, let me state that rectifier bridges with ratings of more than 35 amp are neither readily available or cheap (check your Jaycar or DSE catalogue) and that when you go to buy your stud mounted diodes for the continuously rated beastie you want to build, you WILL make sucking noises. In the case of a rectifier bridge with a 475 amp single surge rating as used in this design, and a rectifier/filter capacitor system which delivers a dc output of 20 volts, a quick calculation will show that around 40 milliohm of total secondary resistance is necessary to meet this specification. This resistance has to come mainly from the secondary winding because the typical primary resistance of 1.5 ohm when reflected through the 18 to 240 volt turns ratio, only contributes around 8 milliohm. So the secondary resistance has to be around 30 milliohm when the loss resistance of the diodes and electrolytics are taken into account. If you calculate the resistance of 6.5 metres of 2.5 square mm copper wire as used in this design, it comes out to almost exactly this figure which is very fortuitous as this wire is also easily obtained. Unfortunately many designs published using 35 amp bridges ignore these unhappy facts and use transformers with very much lower resistances. The inevitable results are premature rectifier failures, which can be very interesting if they happen to go short circuit and apply raw AC to the filter capacitors. With regard to the suggestion that surge limiting can be effected by placing a resistance in series with the primary winding, this sounds reasonable until it is realised that the 5.5 ohm which would be necessary in this design would be dissipating around 16 watts under no load conditions due to the primary magnetising current of 1.7 amps which is typical of microwave transformers. A red hot 20 watt resistor sitting out in the open with the 240 volt mains on it doesn't seem all that practical to me and the decision was therefore made to use the secondary for current limiting purposes where magnetising current is not a consideration.

Finally, a couple of practical points which may be of use to readers who are interested in the design of high current 13.8 volt supplies. Rectifier turn on surge currents can be easily measured in the following way. Terminate the secondary of the transformer you intend using in a one milliohm resistor (about 150 mm of 7 X 0.69mm copper wire) and monitor the voltage across it with a scope. Drive the primary winding from another transformer with a secondary output of around 10-20 volts RMS @ 1 amp minimum. The peak currents in the one milliohm resistor can then be easily measured with the scope and are then scaled up by the factor 240/20 to give the current which your rectifier must tolerate. Last, the outer copper sheath of an old piece of RG-8U or RG-213 with its 200 or so fine conductors has a cross sectional area of almost exactly 6 square mm. and when flattened and covered with heavy masking tape makes ideal secondary wire for a continuously rated 20 amp supply or a 35 amp SSB supply.

Jim Tregellas VK5JST

HAMADS

FOR SALE NSW

• **Transceiver, AWA BS15A**, 240V FM base station on 77 MHz with two speaker/phones. s/n 8R62094 $95. Contact Tony VK2BBJ Phone 02 4360 2234

• **Short Wave Magazines**, Dec 1980, Jan 1981 - Feb 1982 those relating to using 4CX250/4CX350 valves, **Eimac data sheet** for 4CX350A and 4CX350F and **Care and Feeding of Power Grid Tubes by Varian (1978).** All free. Will not separate. Geoff VK2KPK, Phone 02 6845 4203 or (preferred) email gperrin@well-com.net.au

• **BOOK: "Radiotelegraph and Radiotelephone Codes, Prowords and Abbreviations" 3rd Edition (236pages)**, 610 gm, 1.5 lbs, now available. Probably the World's best compilation of this info now available. Q,X,Z Codes, 142 Phonetics, 24 Morse, 8 Needle codes, Myer, Phillips, 10, 11, 12, 13 and other codes. Much other info, abbreviations, procedures and methods. AU$25 + P&P. (in Australia $7.50) Internet: http://www.nor.com.au/community/sarc/phonetic.htm John Alcorn, VK2JWA, QTHR, Phone +61 2 6621 5217 vk2jwa@sarc.org.au

WANTED NSW

• **Atlas model 210X** in good working order, also **Eddystone EC-10** same condition. Ray VK2AWQ Phone 02 6494 1347

• Copy of manual **Marconi Universal Bridge TF 2700** serial 53978/093. Stanley Dogger VK2KSD QTHR

• **Meter shunts 14R8 and 166R6** for vintage University 1000.0PV. M M Dogger, 116 Tunnel Road, Stokers Siding 2484

• **Interrogation Coder plug-in module for IFF/ATC test set model 198A.** Ex RAAF/USAF. Phone 02 9791 0366 or tonymul@pip.com.au QTHR VK2ACV.

• **Geloso G4/218 general coverage receiver** and **STC AMR300 general coverage receiver.** Buy or swap. Ray VK2AWQ ph 02 6494 1347

FOR SALE VIC

• **Yaesu FT-1000** 200W Tcvr w/desk mike & spkr $2000 ono. **Kenwood AT-230** ATU $200. **Nally Tower** $800. **HB35C 5-el ant** $250. **Daiwa rotator** $200. **Icom IC-2A 2m FM** $100. **Azden 2m FM Tcvr** & power supply $100. **Kenwood headphones** $30. **Coax 4 posn switch** $30. **LP filter** $25. Laurie VK3DPD QTHR Phone 03 9818 6009

• **Ideal QTH no QRN modern 18.5 sq home**, fabulous expansive views 7 3/4 acre property, seven mins to highway, shopping, railway station. Ample water, storage shedding, includes Nally Tower. See website http://members.dodo.com.au/~dorcas/ Tom Straughair VK3ABV QTHR

• **Valves** from a deceased estate. Best offer for the lot by the end of the month. 4- QQE06/40s, 2- QQE03/20s 6- 866s, 7- 807s, 6- 2E26s, 1- 6146, 2- 811As, 3- 832s, 3- 813s, 2- QB3-300s with bases, 3- 4X150s, 1 vacuum capacitor 50mmf 7.5kv. QTHR email: dotbob@i-o.net.au or phone 03 5156 7654. Bob Neal VK3ZAN.

• **Siemens teleprinter** with tape perforator and reader, working and in good condition. It's heavy, so you arrange the transport. $60 ono. Norm VK3JAL Phone 03 5456 3122 QTHR. Email: normguy@malleenet.net.au

• **Kenwood TS-690S/AT** original condition with optional ATU HF 100W/6 m 50 W Original Packing/Manual & Hand Mic, Ser no 30800247 $1200. Ernie VK3DET Phone 03 5342 0383 ernie@giant.net.au

• **Icom IC-490a 70cm** all mode 10 W. Original condition ser no 01549 $350. Ernie VK3DET 03 5342 0383 ernie@giant.net.au

• **Silver-Mica capacitors**, pack of mixed values and types about 120 pieces, $10 incl post (to most places) Terry VK3ZXY QTHR Phone 03 9592 3514, email vk3zxy@leithy.com

• Give away to a good home: **AR from 1989 to 1999.** Near complete,approx 100 journals. Address not yet in callbook. Phone 03 5975 0306 (Mornington) Vic. Laurie VK3BV.

• **Antenna, Hustler 4-BTV trap vertical.** 80, 40, 20, 15 & 10 metre bands, with radials and manual. $220 Peter VK3FIM Phone 03 9802 9475 or email pmccallum@telstra.com

• **Equipment Rack** – 19 inch free standing 6ft 6 in high $70. Bill VK3ZWO phone 03 9598 6304

FOR SALE QLD

• **Realistic DX-300** gen coverage receiver, EC $220. **MJF-1214** multimode computer interface and handbook, mint $120. Wayne VK4WDM Phone 07 4722 5770. Email melrosew@optusnet.com.au

• I have approx 160 **old AR magazines**, from DEC 1946 til DEC 1961. About 20 missing from complete set from that era. Condition various from good to some water damage. Will sell, swap or give away to highest bidder! Phone or email to negotiate. Reg VK4CMB Phone 07 3630 4472, email: jonesreg@bigpond.com

• **One set of mobile whips made by G-WHIP of UK**, never used and in perfect condition. 80-10m. One **COM-ANTENNA all band vertical**, in good condition. VK4DV QTHR or phone 07 4928 5537

• **ICOM IC-706MK2G with built-in DSP**, all bands 160m - 70cm, all modes, original packaging and manual, as new in mint condition, $1850. Contact: Carsten VK4OA QTHR Phone 07 3264 6443. Mobile: 0419 966 111. Email: pedersen@powerup.com.au

WANTED QLD

• **Drake SPR-4** or similar Drake gen coverage receiver. **IC-502 6 m** transceiver. **Carolina windom 160-10 m antenna.** All must be GWO. Wayne VK4WDM Phone 07 4722 5770. Email melrosew@optusnet.com.au

• **For Townsville RAAF museum: Copy of book "A Saga of Achievement, the story of RAAF radio"** by E R Hall, circa 1970s. Donations of other books, equipment, parts etc always very welcome. Please don't dispose of anything military until you check with us. Your trash may be our treasure! Wayne VK4WDM Phone 07 4722 5770. Email melrosew@optusnet.com.au

• **Manuals (or copies), service manuals preferred**, for the following equipment: **HP Power-Meter** model 431B. **Airmec Modulation Meter** type 409. **Airmec Sig Generator** type 407. **Dawe Stroboflash** type 12006. **AWA AT oscillator** type A57321. All costs refunded, Gwen VK4CB QTHR Phone 07 3202 7137.

• **Ex army Tx/Rx type 128** manpack used late 1940s/early 1950s. Also after battery box and 6 volt vibrator power supply and hand generator for this set. Ray VK4FH Phone 07 3299 3819. Fax 07 3299 3821, PO Box 5263 Daisy Hill Qld 4127.

FOR SALE SA

• **Yaesu FT707 base mobile transceiver** with WARG bands and handbook $400. Phone 08 8738 0000 QTHR

WANTED SA

• Wanted **operation manual for Yaesu FT-770RH 70cm Transceiver**, also wanted a **2m/70cm Duplexer** Phone 08 8365 9640 or email: ilikepizza@bigpond.com

About hamads....

- Hamads may be submitted by ***email*** or on the ***form on the reverse of your current Amateur Radio address flysheet.*** Please print carefully, especially where case or numerals are critical.
- Please submit separate forms for For Sale and Wanted items, and be sure to include your name, address and telephone number (including STD code) if you do not use the flysheet.
- Eight lines (forty words) per issue free to all WIA members, ninth and tenth lines for name and address. Commercial rates apply for non-members.
- Deceased estates Hamads will be published in full, even if the ad is not fully radio equipment.
- WIA policy recommends that the serial number of all equipment for sale should be included.
- QTHR means the address is correct in the current WIA Call Book.
- Ordinary Hamads from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.
- Commercial advertising (Trade Hamads) are pre-payable at $25.00 for four lines (twenty words), plus $2.25 per line (or part thereof), with a minimum charge of $25.00. Cheques are to be made out to: WIA Hamads.
- Copy should be typed or printed clearly, and be received by the deadlines shown on page 1 of each issue of Amateur Radio, at:

Email: *newsletters@ozemail.com.au* **Fax:** *03 9756 7031*

Postal: *Newsletters Unlimited, PO Box 431, Monbulk Vic 3793*

• (1) **Heathkit QRP transceiver type HW-9.** (2) **Documentation on HF transceiver manufacturers and their products, Granger Associates and Weston Electonics.** Malcolm Haskard VK5BA QTHR Phone/Fax 08 8280 7192, email: mhaskard@chariot.net.au

• **EA for September 1990** as the VHF Power Match Mk2 Project Power Match Reflecto Meter Head from 1971. this is an SWR bridge for both VHF and UHF. VK5ZLC QTHR 08 8294 6906

WANTED TAS

• **For Aust. Wireless Set 101**:- (1) 6 pin line connectors for the power supply and set; (2) 2 pin plug for PS; (3) 2 pin line mounting connectors for PS and set; (4) 2 pin plug for battery case. Phil VK7ZAX QTHR Phone 03 6372 5158

MISCELLANEOUS

• The WIA QSL Collection (now Federal) requires QSLs. All types welcome, especially rare DX pictorial cards, special issue. Please contact the Hon Curator, Ken Matchett VK3TL, 4 Sunrise Hill Road, Montrose Vic 3765, tel. (03) 9728 5350

ADVERTISERS INDEX

For Sale By Tender

Two Way Radio Equipment and Miscellaneous Items

The following items form part of the deceased estate of Mr John Richard Smethurst (VK3TJ) formerly of 90 Raglan Street, Daylesford. These items are offered for sale by tender.
All tenders should be addressed to;

Ms Tennille Rodd
State Trustees
168 Exhibition Street
MELBOURNE 3000
Email: tlr@statetrustees.com.au

Tenders should clearly indicate the tenderers name, address, daytime contact telephone number. Tenders close Friday December 20, 2002.
Further information or inspection of the items can be arranged by telephoning David Verner on 0428 510 404. The items are stored in Maldon, Victoria.

Item No.	Make	Model	Description
Two Way Radio Equipment			
1	National Panasonic	GX600M	5 Band Receiver (FM, MW, Marine, SW1, SW2)
2	Oskerblock	SWR-200	SWR Meters (x2)
3	Kenwood	MC-85	Desktop Microphone (Two way Radio)
4	Plessey		Mobile Radio Extension Speaker
5	Arlec	PS353	Regulated 13.8V Power Supply
6	Minipa		Panel DC Voltmeter
7	Bencher Inc	YA-1	Low Pass Filter 1.8-30Mhz
8	Radio Shack	22-305	RF Frequency Counter
9	Kenwood	SP-23	Extension Speaker
10	Kantronics	Packet Communicator 3	Packet Radio Modem
11	Kantronics	KanPlus	Packet Radio Modem HF, VHF
12	Tokyo Hy-Power	HL-85V	144Mhz All power mode amplifier
13	Realistic	Pro-2026	20-9148A Scanning Receiver
14	DSE		VHF Wattmeter
15	Barlow Wadley	XCR-30 MK2	Receiver
16	Kenwood	TS-790A	144/430/1200Mhz All mode Triband Transceiver
17	Kenwood	VFO-820	Remote VFO
18	DSE	Cat D-3800	3-15V Regulated Power Supply 25A
19	Trio	TS-820S	SSB Transceiver
20	DSE		13.8V Rack mounted Power Supply 1.5kA
21	MFJ	MFJ-989C	Versa Tuner V, 3 kW Series Roller Tuner
22	Philips	FM-900	Transceiver, with mobile antennae
23	Uniden	Pro-150C	Transceiver, with mobile antennae
24	Yaesu	FT-1500M	Transceiver, with mobile antennae, 148.450-147.250,161.025, 163.575MHz
25	Philips	FM-620	UHF Transceiver with mobile antennae
26	MFJ	MFJ-1118	Deluxe high current, DC switched 5 outlet power board 35A
27	Philips	FM-828/25W	Unknown equipment
28	Philips	3502 399 0	Unknown equipment
29	Tech	Model TE-25	Unknown test equipment
30	Silvania	JAN 6146W	Valve - New
31	Matsushita	S2001	Valves (x2) - New
32	Mullard	12BY7A	Valves (x3) - New
33	Mullard	BY74	Valve - New
Computer Equipment			
34	Hewlett Packard	Kayak KA	Personal Computer Pentium 11 processor 4Gb Hard Drive, NEC Multisync M500 monitor.
35	Lexmark	Z22	Colour Printer
36	Canon	LBP-8 Mk111	Laser Printer
37	Colorado	Model 350	Internal Tape Drive
38	Multimedia	MS-898	1000W Super Sub Woofer Multimedia Speakers
39			Computer Desk with Hutch
Miscellaneous Equipment			
40	Garmin	GPS 38	Personal GPS Navigator
41	Nokia	3210	Mobile Telephone
42	Pentax	P30N	35mm SLR Camera, 28-70mm zoom lens
43	Pentax	SFX	35mm SLR Camera, 35-70mm zoom lens
44	Sigma		70-210mm zoom lens
45	Sigma		Lens 55mm Filters - UV, Polarizing with 52mm adapters
46	Brother	Fax 470	Phone, Fax, Copier

Division Directory

The Amateur Radio Service exists for the purpose of self training, intercommunication and technical investigation. It is carried out by amateurs who are duly authorised people interested in radio technique solely with a personal aim and without pecuniary interest.

The Wireless Institute of Australia represents the interests of all radio amateurs throughout Australia. National representation is handled by the executive office under council direction. There is one councillor for each of the seven Divisions. This directory lists all the Divisional offices, broadcast schedules and subscription rates. All enquiries should be directed to your local Division.

VK1 Division Australian Capital Territory,
GPO Box 600, Canberra ACT 2601

President	Gilbert Hughes	VK1GH
Secretary	Peter Kloppenburg	VK1CPK
Treasurer	Linden S Orr	VK1LSO

VK2 Division New South Wales
109 Wigram St, Parramatta NSW
(PO Box 432, Harris Park, 2150)
(Office hours Tue., Thu., Fri., 1100 to 1400 hrs.)
Phone 02 9689 2417
Web: *http://www.wiansw.org.au*
Freecall 1800 817 644
e-mail: *vk2wi@ozemail.com.au*
Fax 02 9633 1525

President	Terry Davies	VK2KDK
Secretary	Owen Holmwood	VK2AEJ
Treasurer	Chris Minahan	VK2EJ

VK3 Division Victoria
40G Victory Boulevard Ashburton VIC 3147
(Office hours Tue 10.00 -2.30)
Phone 03 9885 9261
Web: *http://www.wiavic.org.au*
Fax 03 9885 9298
e-mail: *wiavic@wiavic.org.au*

President	Jim Linton	VK3PC
Secretary	John Brown	VK3JJB
Treasurer	Barry Wilton	VK3XV

VK4 Division Queensland
PO Box 199, Wavell Heights, Qld. 4012
Phone 07 3221 9377
e-mail: *office@wiaq.powerup.com.au*
Fax 07 3266 4929
Web: *http://www.wia.org.au/vk4*

President	Ewan McLeod	VK4ERM
Secretary	Bob Cumming	VK4YBN
Treasurer	Bill McDermott	VK4AZM

VK5 Division South Australia and Northern Territory
(GPO Box 1234 Adelaide SA 5001)
Phone 08 8294 2992
web:*http://www.sant.wia.org.au*
email: *peter.reichelt@bigpond.com*

President	Trevor Quick	VK5ATQ
Secretary	Peter Reichelt	VK5APR
Treasurer	Trevor Quick	VK5ATQ

VK6 Division Western Australia
PO Box 10 West Perth WA 6872
Phone 08 9351 8873
Web: *http://www.wia.org.au/vk6*
e-mail: *vk6@wia.org.au*

President	Neil Penfold	VK6NE
Secretary	Roy Watkins	VK6XV
Treasurer	Bruce Hedland-Thomas	VK6OO

VK7 Division Tasmania
PO Box 371 Hobart TAS 7001
Phone 03 6234 3553 (BH)
Web: *http://www.tased.edu.au/tasonline/vk7wia*
also through *http://www.wia.org.au/vk7*
email: *batesjw@netspace.net.au*

President	Mike Jenner	VK7FB
Secretary	John Bates	VK7RT
Treasurer	John Bates	VK7RT

Broadcast schedules

All frequencies MHz. All times are local.

VK1WI: 3.590 LSB, 146.950 FM each Thursday evening from 8.00pm local time. The broadcast text is available on packet, on Internet *aus.radio.amateur.misc* news group, and on the VK1 Home Page http://www.vk1.wia.ampr.org

Annual Membership Fees. Full $80.00 Pensioner or student $71.00. Without *Amateur Radio* $48.00

VK2WI transmits every Sunday at 1000 hrs and 1930 hrs on some or all of the following frequencies (MHz): 1.845, 3.595, 7.146, 10.125, 14.170, 18.120, 21.170, 24.950, 28.320, 29.170, 52.150, 52.525, 144.150, 147.000, 432.150, 438.525, 1273.500. Plus many country regions on 2m and 70cm repeaters. Highlights are included in VK2AWX Newcastle news Monday 1930hrs. on 3.593 , 10 metres and local repeaters. The text of the bulletins is available on the Divisional website and packet radio. Continuous slow morse transmissions are provided on 3.699 and 145.650. VK2RSY beacons on 10m, 6m, 2m, 70cm and 23cm. Packet on 144.850.

Annual Membership Fees. Full $80.00 Pensioner or student $63.00. Without *Amateur Radio* $50.00

VK3BWI broadcasts on the 1st Sunday of the month at 20.00hrs Primary frequencies, 3.615 DSB, 7.085 LSB, and FM(R)s VK3RML 146.700, VK3RMM 147.250, VK3RWG 147.225, and 70 cm FM(R)s VK3ROU 438.225, and VK3RMU 438.075. Major news under call VK3ZWI on Victorian packet BBS and WIA VIC Web Site.

Annual Membership Fees. Full $83.00 Pensioner or student $67.00. Without *Amateur Radio* $51.00

VK4WIA broadcasts on 1.825 MHz SSB, 3.605 MHz SSB, 7.118 MHz SSB, 10.135 MHz SSB, 14.342 MHz SSB, 21.175 MHz SSB, 28.400 MHz SSB, 29.660 MHz FM (rptr), 147.000 MHz, and 438.525 MHz (in the Brisbane region, and on regional VHF/UHF repeaters) at 0900 hrs K every Sunday morning. QNEWS is repeated Monday evenings, at 19.30 hrs K, on 3.605 MHz SSB and 147.000 MHz FM. On Sunday evenings, at 18.45 hrs K on 3.605SSB and 147.000 FM, a repeat of the previous week's edition of QNEWS is broadcast. Broadcast news in text form on packet is available under WIAQ@VKNET. QNEWS Text and real audio files available from the web site

Annual Membership Fees. Full $95.00 Pensioner or student $81.00. Without *Amateur Radio* $69.00

VK5WI: 1843 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB, 28.470 USB, 53.100 FM, 147.000 FM Adelaide, 146.800 FM Mildura, 146.900 FM South East, 146.925 FM Central North, 438.475 FM Adelaide North, ATV Ch 35 579.250 Adelaide. (NT) 3.555 LSB, 7.065 LSB, 10.125 USB, 146.700 FM, 0900 hrs Sunday. The repeat of the broadcast occurs Monday Nights at 1930hrs on 3585kHz and 146.675 MHz FM. The broadcast is available in 'Realaudio' format from the website at www.sant.wia.org.au Broadcast Page area.

Annual Membership Fees. Full $88.00 Pensioner or student $73.00. Without *Amateur Radio* $58.00

VK6WIA: 146.700 FM(R) Perth at 0930hrs Sunday relayed on 1.865, 3.564, 7.075, 10.125, 14.116, 14.175, 21.185, 29.120 FM, 50.150 and 438.525 MHz, Country relays 3.582, 147.200 (R) Cataby, 147.350 (R) Busselton, 146.900 (R) Mt William (Bunbury).147.000 (R) Katanning and 147.250 (R) Mt Saddleback. Broadcast repeated on 146.700 at 1900 hrs Sunday relayed on 1.865, 3.564 and 438.525 MHz : country relays on 146.900,147.000, 147.200, 147.250 and 147.350 MHz..Also in "Real Audio" format from the VK6 WIA website

Annual Membership Fees. Full $71.00 Pensioner or student $65.00. Without *Amateur Radio* $39.00

VK7WI: 146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.725 (VK7RNE), 146.625 (VK7RMD), 3.570, 7.090, 14.130, 52.100, 144.150 (Hobart), repeated Tues 3.590 at 1930 hrs.

Annual Membership Fees. Full $90.00 Pensioner or student $77.00. Without *Amateur Radio* $57.00

VK8 Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown, received on 14 or 28 MHz. The broadcast is downloaded via the Internet.

Is JOTA dying?

by Scotty (G. Scott) VK2KE

JOTI in action – Albury Girl Guides

I have been active in providing ham radio to scouts and guides since the 1970s and I feel there is a clear waning in activity on the HF and the VHF bands.

Last weekend, 19/20 October, we set up a station at the Albury Guides hall and noticed that the HF bands had very few signals from JOTA stations. We had contacts with stations in QLD and WA on 20 metres.

Scanning 40 metres and 80 metres regularly we noticed a distinct lack of stations.

We for the last years have set up an alternative activity- a JOTI [Jamboree on the Internet] station via the auspices of John VK2YUE and his son David who is an IT expert.

What we have noted is that the JOTI is very popular with the kids as they have computers and Internet at school and probably at home too, so the trend is to go for the JOTI in preference to JOTA on the radio waves.

For quite a few years now, Ian VK2KE and I have set up HF radio and 2 metres for the kids to be able to have JOTA contacts on 80, 40, 20 and the 2 metre bands.

We use a vertical on 2 metres and it gets out well as it is on the roof of the Albury Council building (with permission!).

We hang the HF inverted vees and G5RV off the roof too using a pulley attached to the roof so we can raise and lower antennas from the ground.

For HF we used my TS 180s and on 2 metres, an FM transceiver to use via the Big Ben repeater on 147 MHz and on simplex on 146.5 MHz.

We had a reasonable number of contacts on 20 metres, nil on 40 metres, nil on 80 metres and the 2 metre rig was used via the repeater and on simplex 146.5 to Camp Nelson out west of Albury on the Howlong road.

In the past we had plenty of 40 and 80 m contacts so where have all the operators gone?

Regularly scanning across the 20,40 and 80 metre bands showed very little activity on 40 and 80, which quite surprised us. As in the past these bands have been full of stations working each other in JOTA.

Ian and I have accepted that the JOTI is becoming a strong trend with the kids to be on the Internet, as it is the go thing to do.

We accept this and recognise it is probably natural progress, however, we feel that there is still a place for radio but with few stations on air to work, we found it difficult to get good contacts.

So what we now recommend is to ask operators to get on air and support the kids in their area to provide experience with ham radio as an alternative to merely going on the Internet with JOTI only.

As another test, we are considering using SSTV on HF to allow the kids to transmit a picture of themselves to the station they are working so that each kid can see the person the are talking to at the other end.

We are now actively looking for stations who would be prepared to do this next October for JOTA so we can liven up the contacts on air for the kids and so they can see it's more than voice that we can provide on our bands.

We've got a year to do the planning so let's give it a go and try to make HF radio QSOs more stimulating for the kids in JOTA.

It's our window of opportunity to encourage more young operators into our great hobby!

Any operators who'd like to take part in this experiment are invited to contact me on email gscott@albury.net.au to discuss the idea further or to write to me via PO box 385 Albury NSW 2640

There is an issue of security and privacy in relation transmitting images of kids over the air and on the Internet but the parents will, by and large give approval once they understand what we are doing and the normal precautions we can take.

I look forward to hearing from a good number of operators, who will take part in this aspect of ham radio and JOTA,

73,

Scotty VK2KE

ICOM'S GREAT CHAMPIONS

IC-7400 (746 PRO)

Sharp & soft IF filter shape • 100W HF /6m /2m • Digital twin PBT • DSP • SSB / CW synchronous tuning • Built in antenna tuner • RTTY demod / decoder • Digital RF speech processor • Microphone equaliser.

IC-910H **The new dimension in the VHF/UHF world!**

Tri band multimode transceiver • 2M -100W, 70CM - 75W, (optional 23CM, 10W) • 9600bps packet operation • Satellite communication Reverse/normal tracking doppler shift compensation CIV capability for PC control • Optional 2.4G down convertor.

IC-718 **A compact HF all band transceiver.**

A superior performer with simple, straightforward operation with keypad • Optional AF DSP capabilities, including noise reduction & auto notch function • It's versatile, compact & loaded with features.

IC-706MKIIG **HF • VHF UHF**

The amazing evolution of the legendary 706.

Now includes 70cm @ 20W and 50W on 2m Standard feature dsp • Built in sub tone encoder & decoder Tone scan • MosFET PA • You get base station performance and features in a mobile rig sized package.

IC-T90A **A new 5W Triband handheld**

VHF/UHF FM 2M, 6M, & 70CM
Wideband receive 495 KHz - 1 GHz
555 Alphanumeric memories • 13 Scan modes
DTCS & CTCSS encode & decode
DTMF encoder (10 memories)
Wide/narrow transmit capability.

NEW

ICOM
Clearly Ahead

PH197_AM02

2 YR WARRANTY

find your nearest ICOM dealer at
www.icom.net.au or (03) 9387 0666